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Zhodnocení výkonnosti vybraných podílových fondů v Číně

Performance Evaluation of Selected Mutual Funds in China

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1. Introduction
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List of Annexes
Annexes

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"Herewith I declare that I elaborated the entire thesis, including all annexes, independently."

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Contents

1 Introduction

Equity fund as a part of mutual fund, plays an important role in the Chinese market. Even though the start of mutual fund in China is just from recent decade years, the mutual fund industry still gets good opportunity to develop. With more and more investors recognize the advantages of investing in mutual fund, the performance evaluation for mutual fund is becoming one of essential topics for Chinese investors. Therefore, the aim of this diploma thesis is going to focus on the performance evaluation of six selected Chinese mutual funds, especially equity funds, for the period from 2010 to 2015. The performance is measured by the risk-adjusted indicators such as Treynor ratio, Sharpe ratio, Jensen's alpha and Information ratio.

This diploma thesis entirely contains five chapters. The first chapter is to introduce the motivation and aim of writing diploma thesis and briefly state the content of each chapters.

The second chapter is an introduction of overview of mutual fund industry in China. In this chapter, the first part will introduce the features of mutual fund, role of mutual fund in Chinese financial system, development process of mutual fund and fund regulation in China. In the second part, it will make classification of mutual fund according to various aspects. The third part will highly emphasis the investing in equity fund, classifying and risk of investing in equity fund.

The third chapter is the methodology description of calculating the equity fund performance. These techniques are Peer group comparison, Sharpe ratio, Treynor ratio, Jensen's alpha measure, Information ratio, M2 measure. Fama performance measure and Sortino ratio. Under these measures, the definition, formula, strength and weakness are well interpreted.

The forth chapter is the application part which make practical performance evaluation of selected mutual funds. The first section in this chapter is to introduce the data source and fundamental information of each selected mutual funds. The following is the explanation of calculation procedure and final results for selected mutual funds.

The last chapter is to make conclusion of the whole diploma thesis. To summarize all the information and figures and present the final results of these thesis.

2 Overview of Mutual Fund Industry in China

In this chapter, the attention is paid to the overall description of mutual fund industry in China. It includes interpretation of features and importance of Chinese mutual fund industry, introduction of its origin and development, illustration of present situation and regulation and classification of mutual fund according to different standards. What is more, the introduction of equity fund is explained by classification and risk of investing.

2.1 Collective Investment Fund in China

Mutual fund which is also called security investment fund in China, means an investment method to collect principal from investors by issuing fund shares to form sovereign assets and investment portfolio. Mutual fund can finance capital by way of issuing fund shares and individual or institution investors can participate in fund investment by purchasing amounts of fund shares. The capital collected by mutual fund is confirmed by legislation, which means capital is kept by fund custodian and entrust fund manager to do diversified investment. Fund investors are owners of mutual fund. The profit investing in funds belongs to fund investors after deducting fund expense and it is distributed among investors according to the quantity of share purchasing.

Mutual fund is different from direct investing in stocks or bonds, it is an indirect investment instrument. On the one hand, mutual fund regards financial securities as investment target, on the other hand, investors can indirectly take on security investing by means of purchasing funds shares. Due to the fact that mutual fund has different titles in different countries, in China, it is also called security investing fund.

2.1.1 Features of Mutual Funds

From the book by Asset Management Association of China (AMAC, 2015) mutual fund has five main features which are explained as follows.

Collective Investment and Professional Management

Fund collects capital from amount of investors and entrusts fund managers to invest. By method of collecting amounts of principal, mutual fund can decrease cost of investing, which is good to show the advantage of capital scale. Fund is managed by fund managers to manage and operate. Fund managers usually have great number of researching people who is majoring in investment and strong information network, which is better to follow and deeply analyze the security market. To some degree, small and medium investors can obtain professional investment and management service by giving capital to fund managers.

Diversified Investment and Risk Diversification

In order to decrease risk of investing, some countries regulate that funds should be operated by way of portfolio investment and it becomes one character of fund. Due to the fact of small investment capital from small and medium investors, they cannot diversify the investment risk by purchasing huge quantity of stocks. Fund always purchases hundreds of securities which means investors buy a basket stocks by purchasing funds with little fee. Under most circumstances, loss causing from one falling stock can be made up by other increasing stocks. Therefore, investors can fully get goodness from portfolio investment and diversification risk.

Benefit Sharing and Risk Sharing

One of principles of mutual fund is sharing benefit and risk. Fund investors are owners of fund. Revenue from investing in fund will be owned by fund investor after deducting expense and contributed by investors' share. Fund managers can usually just receive some management fee according to rate and cannot participate in the contribution of fund benefit.

Strict Regulation and Information Transparency

In order to protect investors' interest and increase confidence of investing to fund, fund regulation institutions in many countries strictly supervise fund industry. This behavior causes loss to investors and forces fund companies to take immediate, specified and full information publicity. Under this circumstance, strict regulation and information transparency become another obvious character of fund.

Independent Custody and Security Assurance

Fund managers charge for investing operation of fund, but not participate in management of fund assets. Management of fund assets is responsible for fund trustees, which is independent from fund managers. This kind of method restricting and supervising each other provides an important protection for investors' interest.

2.1.2 Role of Mutual Fund in Financial System

AMAC (2015) describes the basic role of mutual fund in Chinese financial system. A Mutual fund is a method of collecting capital, professionally conducting financial products, portfolio investing and diversifying risk. On the one hand, it can raise capital by means of issuing fund shares; on the other hand, it invests these collected capital in capital market by professional management and portfolio diversification. Due to special system advance of mutual fund, it gradually expands and achieves higher position in financial market.

Widening the Investing Channels for Medium and Small Investors

In Chinese financial market, the capital which is under one hundred thousand RMB is classified as small investors. The capital that from one hundred thousand to one million RMB is regarded as medium investors. For small and medium investors, depositing and purchasing bonds are relative stable but with low rate of return. An investor who has limited capital and investment experience and would like to directly investing in stock will have some difficulties and suffer larger risk. In addition, small and medium investors who lacks of information and investment experience, they will not gain considerable investment return. As an indirect investment instrument designed for small and medium investors, mutual fund can collect small amount capital to invest. Mutual fund can offer a sufficient investment channel for investors and it is widely accepted by many people.

Optimizing Financial Structure and Promoting Economic Growth

At present, conflicts between direct financing and indirect financing exist in Chinese financial structure. The proportion of direct financing through security market is relative low, which stands for the contraction trend. Mutual fund can enlarge the proportion of direct

financing, which creates a good financing environment for arising capital. From recent development of fund market, direct financing instrument which is on behalf of fund and stock can sufficiently spin off depository capital, decrease system risk of finance industry to some degree and offer an important resource for industry development and economy growth.

Stabilizing Security Market and Healthily Developing

During procedure of portfolio investment, mutual fund can help information to be better used and separated. It is good for rational pricing and allocation for market. Mutual fund has advantage of professionally conducting financial product, which can form a reasonable market value system and avoid the speculation. Mutual fund is good for individual investors to change unreasonable investment structure and can supervise and regulate listed company. What is more, mutual fund can offer wide and different selections for investors according to various types, investing targets, risk and return. At the meanwhile, it becomes one of resource to reform capital market and innovate financial products.

Perfecting Financial System and Social Welfare System

Through professional investment service, development of mutual fund can promote insurance market and money market expansion, increase the cooperation among security market, insurance market and money market, improve macro economy policy and develop financial system. From experience of international market, mutual fund can offer pension fund with entity annuity professional service and improve social security system.[1]

2.1.3 Development of Mutual Fund

AMAC (2015) development of mutual fund in China can be separated into three periods, which are early searching period, experimental development and fast development period. *Securities Investment Fund Law* is the turning point for last two periods.

1987-1997

In the year of 1987, China Venture tech Investment Corporation (CVIC) together with HSBC Group and Standard Chartered Group built up China Property Fund in Hong Kong,

[1] Source: https://en.wikipedia.org/wiki/Mutual_fund

directly invested in Pearl River Delta of China and public offered in Hong Kong stock exchange. It was start of Chinese financial institutions with fund services. After establishment of Shanghai stock exchange in 1990 and Shenzhen stock exchange in 1989, the first regulatory security investment fund, Zibo Fund, was set up in November, 1992. This fund was close-ended and listed on Shanghai Stock Exchange in 1993, which collected one hundred million RMB, 60 percentage invested in rural companies in Zibo and 40 percentage invested in listed companies.

With development of Zibo Fund, more and more mutual funds were accepted. However, fast growth of economy led to inflation so that Chinese government strengthened the macro adjustment and controlling. Therefore, mutual fund was strictly audited. However, due to unregulated problems exposure, most of funds were in worse situation and cannot operate further. Fund industry in China was in a stagnation situation.

1998-2003

According to previous development of mutual fund, Securities Regulatory Commission of the State Council established *Interim Measures for the administration of securities investment funds* in 1997. It was the first time that government established administration regulation to regulate mutual fund, which is the system foundation of fund industry in China. Therefore, fund industry in China was in a regulatory experimental period. During this period, regulatory operation of fund industry obtained obvious improvement. In the year of 1999, fund management companies reached 10 and there were 14 new close-ended funds issued. Based on success of close-ended fund, the first open-ended fund, Huaan Innovation Fund, was issued in the year of 2001. It was a turning point of achieving process from close-ended fund to open-ended fund. After that, open-end fund gradually replaced close-ended fund and became the main development direction of mutual fund in China.

During this period, many old close-ended funds were regulatory cancelled and replaced to new mutual funds. It solved the historical remaining issues. In addition, regulatory institutions set up a series of policies to encourage fund industry development and promotion. The fund representing new fund innovation is listed in following Figure 2.1.[2]

[2] Source: http://www.chinafund.cn/

Figure 2.1Initial Issuing of Mutual Funds

Date	Type	Name
08/2002	First Bond Fund	South Baoyuan Bond Fund
03/2003	First Series Fund	China Merchants Fund Series
05/2003	First Risk-avoided & Value-added Fund	China Southern Risk-avoided & Value-added Fund
12/2003	First Money market Fund	Huaan Fuli Cash Fund

Source: Asset Management Association of China. 2015. p 20.

2004-now

In 2004, *Securities Investment Fund Law* was issued and it was an important law for fund industry in China. It showed a new promotion period of fund industry. There were several new changes after issuing new laws. In order to cooperate with *Securities Investment Fund Law,* China Securities Regulatory Commission established *Measures for the administration of securities investment fund management companies, Measures for the operation and management of securities investment funds, Measures for the administration of securities investment fund sales, Securities investment fund sales management securities investment fund information disclosure management approach, Measures for the administration of securities investment funds, Measures for the administration of the senior management personnel of the securities investment fund industry.* These measures improved regulatory system more complete and detailed.

After implementing *Securities Investment Fund Law,* fund market was becoming more and more active and lots of innovation products have arisen. They are listed in following Figure 2.2.

Figure 2.2 Initial Issuing of Mutual Funds (innovation products)

Date	Type	Name
10/2004	First Listed Open End Fund	Southern Active Allocation Fund
12/2004	First Transactional Open Index Fund	China AMC China 50 ETF
05/2006	First Life Cycle Fund	HSBC Jintrust Fund
07/2007	First Structured Fund	UBS Investment Fund Redford
09/2007	First QDII Fund	Southern Global Select Fund QDII
04/2008	First Social Responsibility Fund	Aegon Social Responsibility Fund

Source: Asset Management Association of China. 2015. p 21.

From the year of 2006, some close-ended funds gradually became open-ended funds, the number of close-ended funds was decreasing. Till end of December in 2015, there were 100 fund management companies in China. Among them, there were 45 joint ventures, 55 domestic investment companies, 9 security companies and 1 insurance company acquired qualification of public fund, total amount of managed asset was 8400 billion RMB.

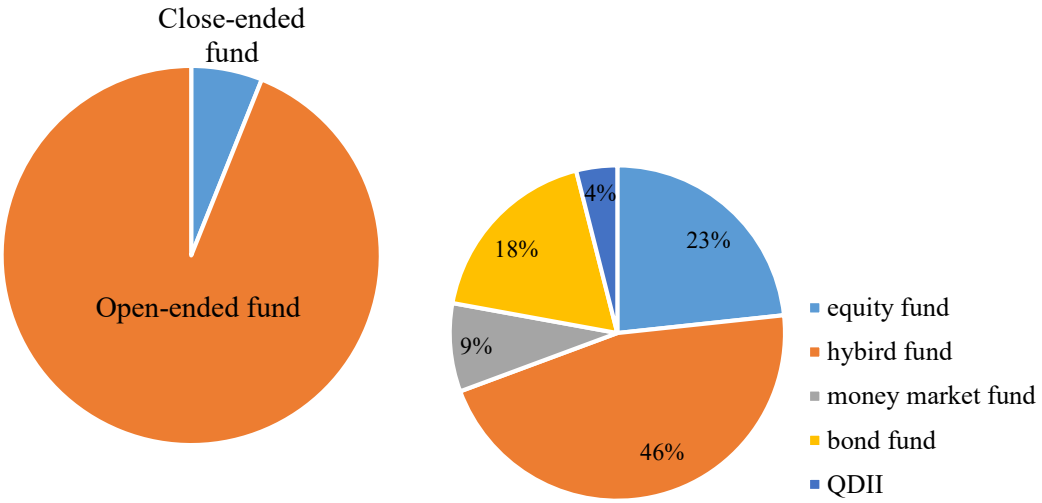
Table 2.3 General Information of Fund Industry in China (until Dec.2015)

Type	Fund number	Share (0.1 bill. CNY/share)	NAV (0.1 bill. CNY)
Close-ended Fund	160	1525.02	1764.95
Open-ended Fund	2476	64138	70275.6
In Open-ended Fund:			
Equity Fund	577	6088.08	7580.48
Hybrid Fund	1140	17731.1	21529.4
Money Market Fund	211	34753.6	34825.6
Bond Fund	450	4846.38	5734.66
QDII	98	718.82	605.45
TOTAL	2636	65663	72040.5

Source: http://www.amac.org.cn/tjsj/xysj/jjgssj/390189.shtml, author.

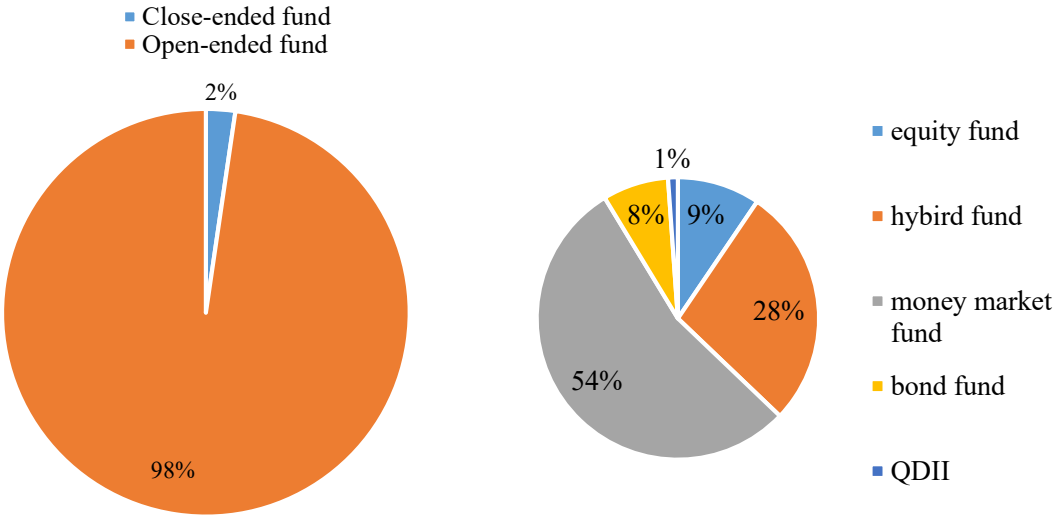
In following part, some information of mutual fund is illustrated based on Table 2.3.

Table 2.4 Fund Number Statistics in China (until Dec.2015)



From Table 2.4, we can fund that number of open-ended fund occupies the most in mutual fund industry. Among open-ended fund, hybrid fund occupies the largest proportion in China. The percentage of money market fund and QDII fund is less than 10% which means they have more development potential.

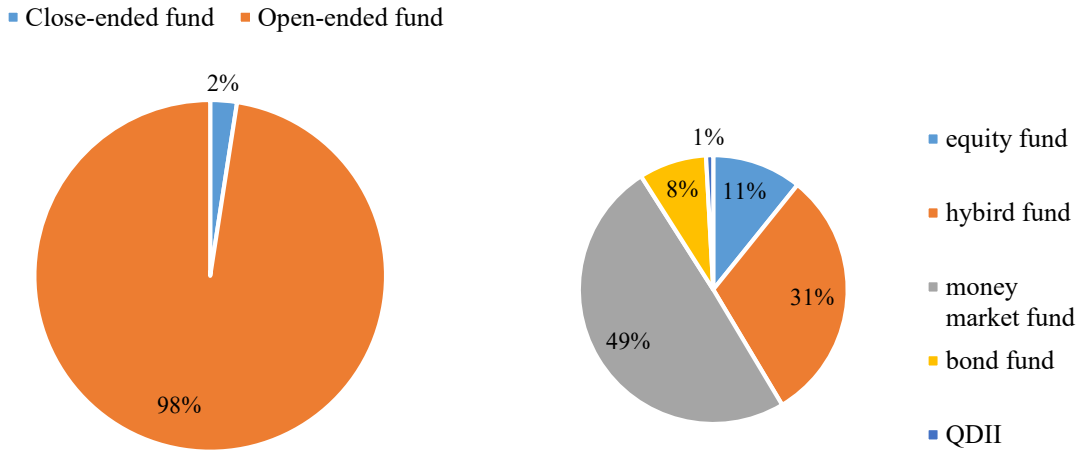
Table 2.5 Value of Shares in Fund Statistics in China (until Dec.2015)



From Table 2.5, we can find that shares of close-ended fund occupy very low proportion and among open-ended fund, money market fund has the highest proportions. That is because money maket fund has advantages of stable income and strong liquidity, Chinese investors with

risk aversion prefer this kind of mutual fund.

Table 2.6 Fund Net Asset Value Statistics in China (until Dec.2015)



Similarly with Table 2.5, net asset value of open-ended fund in Table 2.6 is largeset and money market fund almost occupies half of open-ended fund from the point of net asset value.

2.1.4 Fund Regulation in China

It is very important for investors' interest to supervise and regulate fund activities. Building up healthy and complete fund regulation system is fundamental part to guarantee development of fund industry. China Securities Regulatory Commission is the charge of fund regulation in China. Fund regulation contains three parts, regulation of fund service institution, regulation of fund operation and regulation of fund managers.

In China Securities Regulatory Commission, the department of fund regulation has duty to supervise fund regulation. At the meanwhile, China Securities Regulatory Commission gives local supervision authorities to regulate fund market. Besides, Asset Management Association of China and stock exchange make self-regulation.[3]

2.2 Classification of Mutual Funds

AMAC (2015) states that mutual fund can be separated into many types according to

[3] Source: http://www.csrc.gov.cn/

various aspects. In the following part, mutual fund can be classified due to eight standards.

According to Operation Method

Due to different operation method, mutual fund can be classified into open-end fund and closed-end fund. Closed-end fund means fund share is fixed during the fund contract period. Fund share can be traded in the stock exchange, but shareholder cannot apply for redemption. Open-end fund means fund share is variable and can be subscribed and redeemed during the period of fund contract. Differences in open-end fund and closed-end fund are in maturity, shares limit, trade place, price arising method and regulation system.

According to Legislation Form

In different countries or regions, different legislation environment leads to different legislation forms that mutual fund will adopt. At present, funds in China are all contract type funds whereas the USA have more corporate type funds. Different forms lead to different legislation position, so that fund investors will get different law protection.

According to Investment Subject

Due to different investment targets, mutual fund can be classified into equity fund, bond fund, money market fund and hybrid fund.

a) Equity fund means that one fund invests in stock. It has the longest history among all types of mutual fund and it is widely adopted by many countries. According to standard set by China Securities Regulatory Commission, fund asset investing on stock which is more than 60 percentage belongs to equity fund.
b) Bond fund means the fund that mainly invests in bond. According to standard set by China Securities Regulatory Commission, fund asset investing in bond which is more than 80 percentage belongs to bond fund.
c) Money market fund means the investment target is money market instrument. According to standard set by China Securities Regulatory Commission, fund asset investing only on money market instrument belongs to money market fund.
d) Hybrid fund regards stock, bond or other instruments as investment target, in order to achieve goal of benefiting from different assets and risks.

According to Investment Target

Due to different investment target, we can classify mutual fund into growth fund, income fund and balance fund.

a) Growth fund is aiming at final growth of capital value and takes less consideration on current income. It mainly regards stock with good growth potential as investment target.
b) Income fund chases stable income and regards large-cap blue chips, corporate bonds, government bonds and other fixed income securities as investment target.
c) Balance fund is a kind of mutual fund which not only attend on capital value added but also on growth of current income.

In general, growth fund has larger risk and higher return; income fund has less risk and lower return; risk and return of balance fund are in the middle of income fund and growth fund. Therefore, according to different investment targets, investing directions and strategies in order to fulfill different needs from investors.

According to Investing Concept

Due to different ideas of investment, we can classify mutual fund into active fund and passive fund.

a) Active fund is a kind of mutual fund which strives to surpass benchmark portfolio.
b) Passive fund is different from active fund and it not searches for performance that surpasses market, instead of copying the performance of index. Passive fund usually selects specialized index as following target, therefore it is called index fund.

According to Collection Method

Due to different collection methods, mutual fund can be classified into public fund and private fund.

a) Public fund means mutual fund issuing and selling to the public. It can issue and trade to the public with fund shares and objects with not fixed capital. The principal requirement of investing is low, which is suitable for small and medium investors to participate. What is more, public fund must obey laws and be strictly regulated by supervision authority.
b) Private fund adapts non-public collection and trading with specialized investors.

Comparing to public fund, private fund cannot be publicly issued and propagandized. The requirement of principal is high. The qualification of investors and numbers are usually strictly limited. Comparing to strict regulation of public fund, the operation of private fund is of larger flexibility and regulation is relative less. Private fund not only be invested on financial derivatives to take fictitious transaction, but also be traded on exchange rate and some speculation activities such as commodity futures. The risk of private fund is high therefore, private fund regards wealthy client who has capability to tolerate higher risk as target customers.[4]

According to Capital Resource

Due to different capital resources and usages, mutual fund can be classified into onshore fund and offshore fund.

a) Onshore fund means capital of mutual fund raised in domestic country and invested in domestic security market. Because of investors, organizations, managers, trustees and other parties of onshore fund markets are all in the border, regulation commissions of fund industry are easier to supervise and manage mutual fund by domestic laws and techniques.
b) Offshore fund means mutual fund from one country issues fund shares in other countries and invests capital in domestic or the third country.

Special types of Funds

Besides mutual fund classified in previous paragraphs, mutual fund also has following methods to be classified.

a) Series fund, which is also called Umbrella Fund, means several funds to use same fund contract and the sub-fund is independently operated. Sub-fund can be exchanged with each other.
b) Guaranteed fund. It means a kind of mutual fund that can obtain principal return or amount of return by investment portfolio. The investment target is to ensure potential high return at the same time when locking risk of falling down.
c) ETF (Exchange Traded Funds). It is a kind of mutual fund that can be traded in stock

[4] Source: http://baike.baidu.com/view/14804.htm

exchange and fund shares are variable. ETF usually adapts passive investment strategy to follow one object of market index, therefore it is with character of index fund. ETF combines the operation character of close-ended fund and open-ended fund. Investors not only can trade ETF like close-ended fund in the secondary market, but also can be subscribed and redeemed like open-ended fund. The subscribing of ETF uses a basket stock to exchange ETF shares and when it need redemption, it will be exchange back a basket stocks instead of cash. This kind of trade system leads to arbitrage between the first and secondary market, which can sufficiently avoid sharply discount like close-ended fund do.

d) LOF (Listed Open-ended Funds). It is a kind of open-end fund that not only proceed subscribe and redemption in the OTC market, but also can be traded in the stock exchange. It combines advantages of consignment institutions and network of stock exchange, opening up a new channel of selling open-ended funds.

e) QDII Fund. It is abbreviation of Qualified Domestic Institutional Investors. It means fund is set up in border of one country and can trade in security in foreign market after approving by regulatory authorities. The first QDII fund in China was established in the year of 2007.

f) Structured fund. It can be called Separable Exchange Fund. It separates ordinary fund shares into different shares that has different expected return and risk by structural designing and arranging in one fund. The separated fund shares can be open listed and traded as well AMAC (2015).

2.3 Investing in Equity Fund

Equity fund is aiming at long term capital value added investment and it is more suitable for long term investing. Comparing to other types of mutual fund, equity fund has higher risk and higher expected return. That is to say, equity fund provides a kind of long term investment possibility that fulfills the need of investment of education expense and retirement expense.

2.3.1 Types of Equity Funds

Stock can be classified several main types according to financial market, scale and industry.

Similarly, we can classify equity fund due to the features of stocks. AMAC (2015) states one stock may contain two or more features. And one equity fund can be classified to different types.

According to Investment Market

Due to different investment markets, there are three kinds of equity funds such as domestic equity fund, foreign equity fund and global equity fund.

a) Domestic equity fund regards domestic stock market as investment places, the investment risk is mainly influenced by domestic market.
b) Foreign equity fund regards non-domestic stock market as investment places. Due to different currency, there exists exchange rate risk to some degree.
c) Global equity fund invests in global stock market including domestic stock market and takes on global diversified investment, which is against investment risk from single country or area. However, the expense is high due to large investment scope.

According to Stock Market Price

It is a basic classification method according to the market price of stock. Therefore, focusing on investing in small-cap stock is called small-cap equity fund. Similarly, there are mid-cap equity fund and large-cap equity fund as well. There are usually two methods to classify stock scale. First is according to absolute value of company market price. The market value of company with less than 5 million RMB will be classified to small-cap stock, higher than 2 billion RMB will be large-cap stock. The other is due to relative scale such as ranking the level of listed company. The company with less 20 percentage of total market value will be small-cap stock, with higher than 50 percentage will be large-cap stock.

According to Stock Nature

Due to different natures of stock, it is usually classified into value equity fund, growth equity fund and balance equity fund.

a) Focusing on the value stock investment is called value equity fund. Value stock means stock with stable revenue, undervalued and safer. The PE ratio and PB ratio are usually low. It prefers long-term investment so that investors usually have more patience on value equity fund. The investment risk of value equity fund is lower than growth equity fund so that

return of it lower than equity fund as well.

b) Focusing on growth stock investment is called growth equity fund. Growth equity fund means stock with high increasing on revenue, large development potential. The PE ratio and PB ratio are usually high. It is different with value equity fund, once market changes, investors of growth equity fund will choose fast in and out strategy with short-term operation.

c) Simultaneously investing in value stock and growth stock is called balance equity fund. The return and risk of balance equity fund are between value equity fund and growth equity fund.

According to Fund Investment Style

From the point of Small-cap stock, sometimes it can be one value stock or one growth value stock. However, for Large-cap stock, it is either value stock or growth stock. In order to efficiently analyze the feature of equity fund, equity fund can be classified by different investment styles according to average scale and different natures. Such as Large-cap value equity fund, Large-cap balance equity fund, Large-cap growth equity fund.

Figure 2.7 Fund Classification by Investment Style

	Small-cap	Mid-cap	Large-cap
Growth	Small-cap growth	Mid-cap growth	Large-cap growth
Balance	Small-cap balance	Mid-cap balance	Large-cap balance
Value	Small-cap value	Mid-cap value	Large-cap value

Source: Asset Management Association of China, 2015. p 32. Author.

We need to pay attention to many equity funds which are not constant in investing style. It will adjust due to the market environment in order to achieve higher return. This phenomenon is called style changing.

According to Sector

It usually shows similar feature and price trend in the same industry. Equity fund regards some specified industry or sector as investment target is sector equity fund. Such as foundation industry fund, resource stock fund, real estate fund, financial service fund and science and

technology stock fund. The performance of different industries are various in different economic cycle. In order to gain better return, there is another mutual fund called Industry rotation fund. It focuses on industry investment with relative high investing risk.

2.3.2 Risk of Investing in Equity Funds

The risk that equity fund will face mainly include systematic risk, unsystematic risk and operational risk. Systematic risk is market risk, which is caused by politics, economy and social environment factors. It includes policy risk, economy cycle fluctuation risk, exchange rate risk, purchasing power risk, interest rate risk and so on. Systematic risk cannot be deducted by diversified investment which is also called undiversified risk. Unsystematic risk means risk that some securities owned specially. It includes credit risk, operation risk and financial risk. Unsystematic risk is also called diversified risk and it can be avoided by diversified investment.

Equity fund can greatly decrease the unsystematic risk of single stock investment by diversified investment, however, it cannot avoid systematic investment risk. The operational risk is different due to different equity funds. It means the risk causing by active operation behavior by equity fund managers.

Different types of equity funds will face different risks. If singly investing on industry equity fund will exist industry investment risk. Whereas the fund investing in the whole market will not face industry risk. If singly investing on national equity fund will face relative high investment risk. However, global equity fund can better avoid this kind of risk.

3 Description of Risk-Adjusted Methods of Return

This part will focus on the description and interpretation of methods used in calculation of equity fund performance. The techniques of performance measurement contain two main parts, peer group comparisons and composite portfolio performance measures. The second measurement method will be introduced in details.

3.1 Peer Group Comparisons

The peer group comparison is the most popular method of evaluating portfolio (Reilly and Brown, 2009). It collects the estimated equity fund returns during a specific period of time and display them in boxplot. From the boxplot, it is clear to show a relative comparison with given equity fund. In addition, this measure should also include the comparison of periodic returns to the market benchmark returns, such as NASDAQ Composite, S&P 500 and DJIA. The return of market benchmark can also be displayed on the boxplot together with portfolio returns.

However, this measure cannot evaluate the portfolio performance accurately. The first reason is that this measure does not make any adjustment for the risk level of the portfolios. Secondly, it is difficult to set peer group for large enough to make ranking available and significant. Lastly, this measure does not focus on any other factors expect relative returns. Therefore, it is necessary to estimate portfolio performance by combination of risk and return.

3.2 Sharpe Ratio

Sharp ratio, which is also named Sharp Index, a standardized index to evaluate fund performance. From modern investment research, Sharp ratio plays a fundamental role in deciding portfolio performance.

In the year of 1966, the winner of Nobel Memorial Prize in Economic Sciences William F. Sharpe developed Sharpe ratio basing on Capital Asset Pricing Model (CAPM) with the Capital Market Line from investment theory (REILLY and BROWN, 2009). As we know, regular

characteristic in investing activities is if investors want higher expected return, the larger volatile risk that they can accept. On the contrary, the less expected return, the lower risk of volatility. Therefore, the main investment portfolio target for rational investors is to choose the product which can get the largest return with fixed and acceptable risk or which can get stable expected return with lowest risk.

Therefore, the core theory of Sharp ratio is that rational investors will choose and hold efficient portfolio investment (KANE and MARCUS, 2011). It means maximizing expected return of portfolio under given risk level or minimizing risk of portfolio with given expected return. In other words, William F. Sharpe thinks the return must reach riskless investing return at least or more when building up risky investment portfolios. If assets in portfolio are risky assets, it is more suitable to use Sharpe ratio. Moreover, according to the CAPM, Sharpe Ratio of the market portfolio is the reward for a unit of systematic risk.

The Sharpe Ratio of portfolio performance is stated as follows:

$$SR_p = \frac{(\overline{R_p} - R_f)}{\sigma_p}. \tag{3.1}$$

Where:

$\overline{R_p}$ = the average rate of return for portfolio during a specified period

R_f = the average rate of return on a risk-free investment during the same period

σ_p = the standard deviation of the rate of return for portfolio during the time period

The target of Sharpe ratio is to know the expected return causing by each unit of total risk. The numerator is the portfolio risk premium, it means the risk premium return earned per unit of total risk. If Sharpe ratio is positive value, it means rate of return larger than volatility risk; if Sharpe ratio is negative, it means risk of operating fund is large rate of return. Therefore, the larger of proportion of return and risk, the better of this investment portfolio. And the portfolio performance measure uses the CML to compare all portfolios.

In the real world, if all other characteristics being equal, investors prefer larger Sharpe Ratio than lower ratio. And Sharpe ratio does not calculate the correlation with other securities

and we should pay much attention on its weakness.

Advantages

Sharpe ratio is simple and direct to compare the risk to return trade. And due to the use of standard deviation as total risk, Sharpe ratio links the CML and capital market theory. In addition, it is widely used in reality due to its simple calculation and few assumptions.

Disadvantages

When it comes to risk factors, Sharpe ratio not only refers to systematic risk, but also non-systematic risk. It ignores the diversification of portfolio. It is not suitable to regard standard deviation as risk index and it will exist errors when standard deviation is large. What is more, the efficiency hypothesis relies on the assumption of riskless rate. It does not have benchmark point, therefore Sharpe ratio is only useful in comparison with other portfolios. Sharp ratio does not consider the correlation with other portfolio, therefore, it is a big problem to build up portfolio according to the size of Sharp ratio. Same as other indicators, Sharpe ratio is a standard to estimate history performance for funds and investors cannot simply operate funds according to historical figures in the future. Sharpe ratio also exist stability problem, which means the final result is relevant to time period choice.

3.3 Treynor Ratio

Treynor ratio is introduced with the establishment of characteristic line, which can show the relationship between return of portfolio and market benchmark. And Treynor ratio uses the systematic risk (beta) as the estimation factor.

Treynor ratio was developed by Jack L. Treynor, which reflects the return earned in excess of that which could have been earned on an investment that has no diversifiable risk, per each unit of market risk assumed. It uses systematic risk instead of total risk so that can apply to all investors ignoring their investment preferences (REILLY and BROWN, 2009). The systematic risk comes from the slope of characteristic line, which is portfolio beta coefficient as well. The higher slope (beta) means the more sensitive to market return and has larger market risk (REILLY and BROWN, 2009). And the larger of Treynor ratio, the higher of unit risk premium,

the better performance of open-ended funds and the easier for investors to make profit. On the contrary, the less of Treynor ratio, the lower of unit risk premium, the worse performance of open-ended funds and the more difficult for investors to make profit. If Treynor ratio is not completely diversified, the risk will be understated and the performance will be overstated.

The Treynor ratio of portfolio performance is stated as follows:

$$T_p = \frac{\overline{R_p} - R_f}{\beta_p}. \tag{3.2}$$

Where:

$\overline{R_p}$ = the average rate of return for portfolio during a specified period

R_f = the average rate of return on a risk-free investment during the same period

β_p = the slope of the fund's characteristic line during that time period

In this formula, a larger Treynor ratio indicates a better portfolio for all investors, regardless of their risk preferences. The numerator is the risk premium and the denominator is beta coefficient, therefore it shows the portfolio risk premium return per unit of risk. Due to characteristic of Treynor ratio, all risk-averse investors would prefer to maximize this value (REILLY and BROWN, 2009).

From previous simple description, the risk that fund portfolio faces contains systematic risk and non-systematic risk. The first is historical standard deviation σ, it estimates the total risk of investment return. The second is the assessment value of β, it is systematic risk factor. Treynor thinks fund managers should avoid all non-systematic risk by investment portfolio, therefore the unit risk factor is systematic risk. If a portfolio is enough diversification, it does not have non-systematic risk, it just has systematic risk with market change.

When comparing Treynor ratio with market benchmark, all results will be displayed and compare with SML. The method of calculating Treynor ratio of market benchmark as follows:

$$T_M = \frac{R_M - R_f}{\beta_M}. \tag{3.3}$$

In this formula, β_M equals to 1.0 (market beta) and T_M shows the slope of SML.

Therefore, portfolio with higher Treynor value than market benchmark above the SML, meaning superior risk-adjusted performance (REILLY and BROWN, 2009).

Advantages

It is similar with Sharpe ratio that Treynor ratio is simple and direct according to the risk-return trade-off. It links the SML and capital market theory and it is easy to compute and widely use in reality.

Disadvantages

Like Sharpe Ratio, Treynor Ratio is just a ranking criterion and it is useful fully diversified portfolio. Treynor Ratio considers systematic risk instead of total risk, therefore, it cannot estimate the degree of fund risk diversification. And systematic risk will not decrease by investment portfolio diversification. Therefore, even though fund manager can operate well in risk diversification, Treynor Ratio may not increase to some degree.

3.4 Jensen's Alpha Measure

Jensen's alpha, which is also called Jensen's performance index, is an indicator that estimating the excess return over the fund expected return. This indicator comprehensively considers the rate of return and risk factors, which is more scientific than simply usage of rate of return.

As Reilly and Brown (2009) state, Jensen's alpha was used in the evaluation of mutual fund by Michael Jensen in 1968 which is also based on the capital asset pricing model (CAPM). Jensen's alpha can evaluate fund performance by total consideration of fund return and risk factor. One excellent fund product can surpass the big board performance by positive investment and management. It means that investors should attain excess return above on market average level. If we quantify and apply this idea into fund product, we can chase for the maximization of Jensen's alpha and make excess return maximized. Only by investing this kind of fund products, can investors achieve the goal of entrusted investment and the largest return.

The Jensen's Alpha of portfolio performance is stated as follows:

$$E\left(R_p\right) = R_f + \beta_p \cdot \left[E\left(R_M - R_f\right)\right]. \tag{3.4}$$

Where:

$E(R_p)$ = the expected return for portfolio during a specified period

R_f = the one-period riskless interest rate

β_p = the systematic risk (beta) for portfolio

$E(R_M)$ = the expected return on the market portfolio

Equation 3.4 can be expressed in terms of realized rate of return as follows:

$$R_p = R_f + \beta_p \left(R_M - R_f \right) + e_p. \tag{3.5}$$

Equation 3.5 states a liner function of the risk free rate of return during specified period, adds on risk premium and random error term. If deducting the risk free rate from both two sides, the equation can be expressed as follows:

$$R_p - R_f = \beta_p \left(R_M - R_f \right) + e_p. \tag{3.6}$$

It is clear that risk premium earned by portfolio p equals to beta times market risk premium plus random error term. Sometimes superior portfolio manager who predicts market turns or select undervalued securities earn higher risk premiums over time than those implied in this model (Reilly and Brown, 2009) In order to deduct the superior measure, it is necessary to add intercept (nonzero constant value). Therefore, Equation 3.6 can be stated as follows:

$$R_p - R_f = \alpha_p + \beta_p \left(R_M - R_f \right) + e_p. \tag{3.7}$$

Where:

α_p = the expected return in excess of market portfolio

Alpha indicated whether a manager has superior or inferior ability market timing or equity selection, or both. And because Jensen's alpha measure represents the return that is higher than market portfolio return. If Jensen's alpha if larger than zero, it means fund performs better than market portfolio. The larger of Jensen's Alpha, the better of fund. On the contrary, if Jensen's Alpha is less than zero, it means fund performance is not good. What is more, for poorly diversified fund, Jensen's ranking will be closely resemble Treynor's ratio. For well-diversified funds, Jensen's ranking will follow those of both Treynor's ratio and Sharpe ratio (Reilly and

Brown, 2009).

Advantages

Investors can refer Jensen's alpha so as to compare the portfolio return with market benchmark return. Even though sometimes the return of portfolio in one period is negative, it does not mean this fund is bad. Comparing with other evaluation methods, Jensen's alpha measure is more comparable due to its comprehensive consideration of fund return and risk. It is a right choice for rational investors to chase for maximization of Jensen's alpha and excess return.

Disadvantages

Only if the Jensen's alpha is positive during the same period, it is possible to think this portfolio is good open-ended fund. On the contrary, if the open-ended fund has good cash return but Jensen's alpha is negative, it will be regarded as bad open-ended fund. In addition, this measure is more difficult to calculate due to the use of regression analysis. And alpha value and significance can vary according to return-generating model.

3.5 Information Ratio

Information ratio is used to estimate the risk adjusted excess return of one portfolio over one specified indicator basing on Markowitz Mean-Variance Model.

As Reilly and Brown (2009), KANE and MARCUS (2011) said, information ratio is a measure of risk-adjusted return of portfolio, which is also called Appraisal ratio. It is a ratio of portfolio returns above the return of a benchmark to the volatility of returns. Information ratio measures portfolio manager's ability to get excess return basing on a benchmark, and identifies the consistency of the investor as well.

The Information ratio of portfolio performance is stated as follows:

$$IR = \frac{\overline{R_p} - \overline{R_M}}{\sigma(\overline{R_p} - \overline{R_M})} = \frac{\overline{ER_p}}{\sigma_{ER}}. \tag{3.8}$$

Where:

$\overline{ER_p}$ = the expected return of the excess return during the period

$\overline{R_p}$ = the expected return for portfolio during a specified period

$\overline{R_M}$ = the average return for the benchmark portfolio during the period

σ_{ER} = the standard deviation of the excess return during the period

Due to the fact that Information ratio is the ratio of alpha to residual risk, the coefficient σ_{ER} regarded as tracking error of investor's portfolio. Residual risk is the standard deviation of residual return and fund managers should use it to compute alpha. The more alpha the investors produce for a given amount of residual risk, the higher of ratio (Christopherson et al., 2009) And if taking risk free asset as market benchmark due to special case, the Information ratio can be rewrote as following equation:

$$IR = \frac{\alpha_p}{\sigma_e} \tag{3.9}$$

Where:

α_p = Jensen's alpha

σ_e = the standard error of the regression

Due to Information ratio is intimately associated with the benchmark and it is better to use it when comparing return series basing on same benchmark. The Information ratio is usually annualized.

$$Annualized\ IR = \frac{(T)\alpha_p}{\sqrt{T}\sigma_e} = \sqrt{T}(IR) \tag{3.10}$$

T = periodic returns measured T times per year

Information ratio describes the risk-adjusted return from the aspect of positive management. It is different from the Sharpe ratio which is from the aspect of absolute return and total risk. The higher of Information ratio, the higher excess return from tracking error. Therefore, the fund with larger Information ratio performs better than the lower.

Advantages

One of essential factors that investors will consider when they choose fund is if fund company can directly provide a clear performance prediction. Therefore, Information ratio is of great importance for fund managers' performance. Because fund company will encourage absolute performance instead of constant stable performance. Rational investment target should chase for higher Information Ratio with acceptable risk instead of simply high Information ratio. And this measure permits to set various benchmark to make comparison.

Disadvantages

It is difficult to obtain alpha value by regression analysis. And the statistical significance is also difficult to interpret and assess. What is more, it assumes that portfolio and market benchmark have similar systematic risk.

3.6 Modigliani-Modigliani Measure

Modigliani-Modigliani measure is a measure of the risk-adjusted returns of portfolio. It is suggested as an alternative to compare portfolio with different Sharpe ratio (Christopherson et al, 2009).

Modigliani-Modigliani measure, which is also called M^2, M2 or RAP. It is developed by the winner of Nobel Memorial Prize in Economic Sciences, Franco Modigliani and his grandson from JP Morgan Leah Modigliani. M2 measure is derived from the Sharpe ratio, but it is better used in units of percent return.

The M2 Measure of portfolio performance is stated as follows:

$$MM_p = \left[\frac{E(R_p - R_f)}{\sigma_p} \right] \sigma_M + E(R_f) = SR_p \sigma_M + E(R_f). \tag{3.11}$$

Where:

SR_p = the Sharpe Ratio of portfolio during the time period

σ_M = the standard deviation of the rate of return for portfolio during the time period

$E(R_f)$ = the average rate of return on a risk-free investment during the same period

The larger of M2 measure, the better of fund performance. On the contrary, fund performance is worse. M2 measure is adjusted according to total risk. It reflects the return of mixed portfolio over the market level when mixing portfolio with riskless asset to reach the same risk level with market portfolio. The goal is to improve the investors' preference of simple consideration on original performance and to encourage investors to pay attention on risk factors in fund performance so that helping investor select real best performance fund. Comparing to Sharpe ratio, M2 measure regards total risk as risk measurement. This kind of measure can simply explain the reason why relating to different benchmark index, it will show different levels of return. The ranking of M2 measure is the same as Sharpe ratio on fund performance.

3.7 Fama Performance Measure

As REILLY and BROWN mentioned (2009), the development of basic performance tools will be introduced in this section. A composite measure that takes portfolio diversification is main point if evaluating the investment performance. Fama (1972) suggested a measure to estimate the overall performance of portfolio, in excess of the risk free rate, can be regarded as sum of risk-takin and equity selection skill as well. The definition can be expressed as follows:

$$\text{Overall Performance} = \text{Excess Return} = \text{Portfolio Risk} + \text{Selectivity} \tag{3.12}$$

The selectivity indicator means the portion of the portfolio's actual return beyond available to an unmanaged portfolio with systematic risk and it used to estimate the manager's investment ability. And selectivity can be used to compute the return and method of obtaining the selectivity is as follows:

$$Selectivity = R_a - R_x(\beta_a). \tag{3.13}$$

Where:

R_a = the actual return on the portfolio being evaluated

$R_x(\beta_a)$ = the return on the combination of the risk free asset and the market portfolio that has risk β_x equal to β_a, the risk of the portfolio being evaluated

According to the previous introduction, the overall performance can be written as follows:

$$\text{Overall Performance} = \text{Selectivity} + \text{Risk} \tag{3.14}$$

$$\left[R_a - R_f\right] = \left[R_a - R_x(\beta_a)\right] + \left[R_x(\beta_a) - R_f\right] \tag{3.15}$$

Equation 3.14 means the overall performance is the total return above risk free return and includes return that should receive for accepting portfolio risk, which is equal to risk. If there are any excess over expected return is due to selectivity (REILLY and BROWN, 2009).

The selectivity in Equation 3.14 can also be separated into two parts. If fund manager tries to select undervalued funds and ignores the diversification, it is possible to measure the added return necessary to adjust diversification decision (REILLY and BROWN, 2009). This process can be expressed as follows:

$$\text{Selectivity} = \text{Net Selectivity} + \text{Diversification} \tag{3.16}$$

$$R_a - R_x(b_a) = \text{Net Selectivity} + \left[R_x(s(R_a)) - R_x(b_a)\right] \tag{3.17}$$

or

$$\textit{Net Selectivity} = R_a - R_x(\beta_a) - \left[R_x(\sigma(R_a)) - R_x(\beta_a)\right] = R_a - R_x(\sigma(R_a)) \tag{3.18}$$

$R_x(\sigma(R_a))$ = the return on the combination of the risk free asset and the market portfolio that has return volatility equivalent to that of the portfolio being evaluated

The diversification measure in Equation 3.18 means the added return required to justify loss of diversification in portfolio. If the selectivity is negative, it means the manager does not perfectly match the target with portfolio risk.

3.8 Sortino Ratio

Sortino ratio, which is explained by REILLY and BROWN (2009), is a method to estimate investment portfolio relatively performance. It is similar to Sharpe ratio, but Sortino ratio use downside risk instead of standard deviation in order to distinguish good and bad volatility.

Sortino ratio was created by Brian M. Rom in the year of 1983. It measures the risk-adjusted return of an investment asset, portfolio, or strategy (KANE and MARCUS, 2011). The Sortino ratio is a method to compare the risk-adjusted performance of portfolio by differing risk

and return. In general, risk-adjusted return seeks to normalize the risk across programs and then see which has higher return unit per risk.

The Sortino ratio of portfolio performance is stated as follows:

$$ST_p = \frac{\overline{R_p} - \tau}{DR_p}. \tag{3.19}$$

Where:

$\overline{R_p}$ = the average rate of return for portfolio during a specified period

τ = the minimum acceptable return threshold specified for the time period

DR_p = the downside risk coefficient for portfolio during the specified time period

Downside risk is used to estimate the volatility of return by portfolio which is less the expected return rate. One of most useful calculation method is semi-deviation and it is computed as follows:

$$Semi\text{-}Deviation = \sqrt{\frac{1}{n}\sum_{R<\overline{R}}(R_p - \overline{R_p})^2}. \tag{3.20}$$

Where:

n = the number of portfolio returns falling below the expected return

Sharpe ratio and Sortino ratio will provide the same performance ranking when return distributions are symmetrical for consideration. If returns are asymmetric distributions, for example, manager is hedging risk exposure by portfolio insurance strategy, the performance ranking should differ (REILLY and BROWN, 2009).

4 Performance Evaluation of Selected Mutual Funds

In this chapter, the main objective is to evaluate the performance of following mentioned selected Chinese mutual funds. The portfolio performance will be based on Sharpe ratio measure, Treynor ratio measure, Jensen's alpha measure, Information ratio measure, Fama measure and Downside ratio measure.

4.1 Data Description

In the part of calculation, there are six equity funds selected from Chinese mutual fund market and all of them have more than five years operation history. The original data are net asset value of each month from December of 2009 to December of 2015. The performance benchmark of equity fund are CSI300 and NASDAQ Composite Index. CSI300 is designed to reflect the price fluctuation and performance of China A share market.[5] It replicates the performance of 300 stocks traded in the Shanghai and Shenzhen stock exchanges. NASDAQ Composite index is a stock market index of common stocks and securities listed on the NASDAQ Composite stock market.[6]The market benchmark data also have same estimated period as selected equity funds. What is more, the risk free rate in the calculation is Inter Bank Offered Rate of Chinese bank. The annual risk free rate is 3.77% [7]and the average monthly value is around 0.31% after being divided by 12. In following paragraphs, the six selected equity funds will be introduced in details.

[5] Source: http://www.csindex.com.cn/sseportal_en/csiportal/zs/jbxx/report.do?code=000300&subdir=1

[6] Source: https://en.wikipedia.org/wiki/Nasdaq_Composite

[7] Source: http://www.pbc.gov.cn/

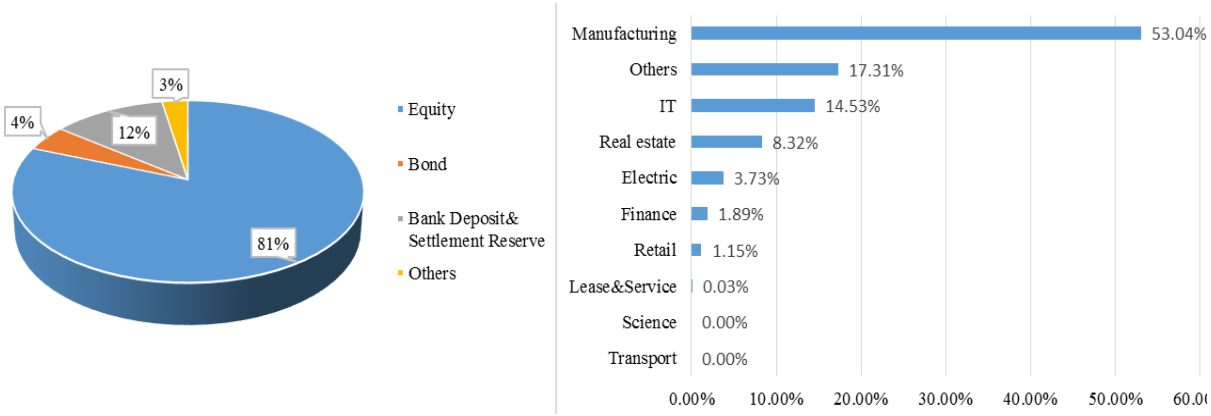
Figure 4.1 Information of Selected Equity Funds

Fund Code	Fund Name	Fund Company
340006	AIFMC Global View Fund	AEGON-INDUSTRIAL Fund
519692	BOCOM Schroder Growth Mixed A	BOCOM Schroders
519694	BOCOM Schroder Blue Chip Stock Fund	BOCOM Schroders
519698	BOC Schroder Pioneer Stock Fund	BOCOM Schroders
540006	HSBC Jintrust Large-cap Equity Fund	HSBC Jintrust
540007	HSBC Jintrust Small/mid-cap Equity Fund	HSBC Jintrust

Source: http://finance.sina.com.cn/

Figure 4.1 shows sixes selected equity funds basic information. The full name of each funds and the fund companies that issuing these funds.

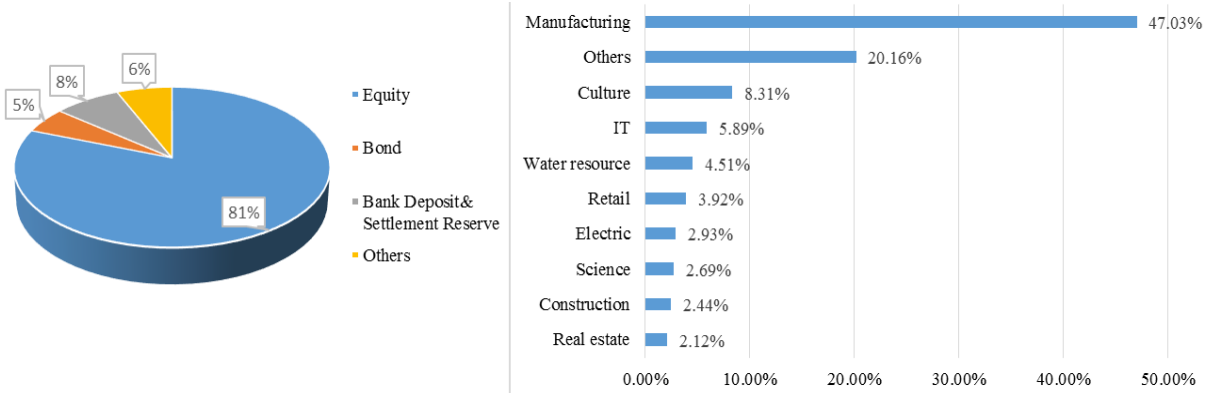
Figure 4.2 Asset Allocation and Industry Distribution of AIFMC Global View Fund



Source: http://finance.sina.com.cn/fund/quotes/340006/bc.shtml, author.

Equity fund AIFMC Global View Fund starts from September, 2006. It is a middle-cap equity fund. The aim of AIFMC Global View Fund is to invest on competitive and undervalue companies basing on global investment view. From the left side of Figure 4.2, it is clear that the AIFMC Global View Fund allocates 81% assets on equity, which confirms the characteristic of equity fund. On the right side of Figure 4.3, the manufacturing industry is the highest invested industry in this equity fund.

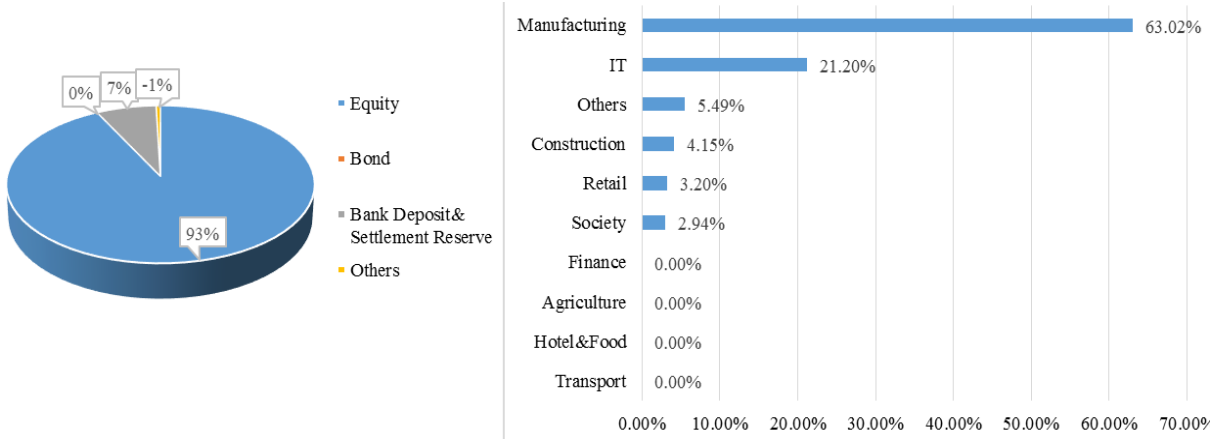
Figure 4.3 Asset Allocation and Industry Distribution of BOCOM Schroder Growth Mixed A



Source: http://finance.sina.com.cn/fund/quotes/519692/bc.shtml, author.

BOCOM Schroder Growth Mixed A was issued in October, 2006. It is a middle-cap equity fund. On the left side of Figure 4.3, there are 77% of assets are allocated in equity and 17% of assets are allocated in bond. Therefore, this fund is a growth equity fund and invests on potential equity which is listed on exchange stock preferring long-term stable capital increasing. On the right side of Figure 4.3, the proportion of investment occupies the highest part on manufacturing industry.

Figure 4.4 Asset Allocation and Industry Distribution of BOCOM Schroder Blue Chip Stock Fund

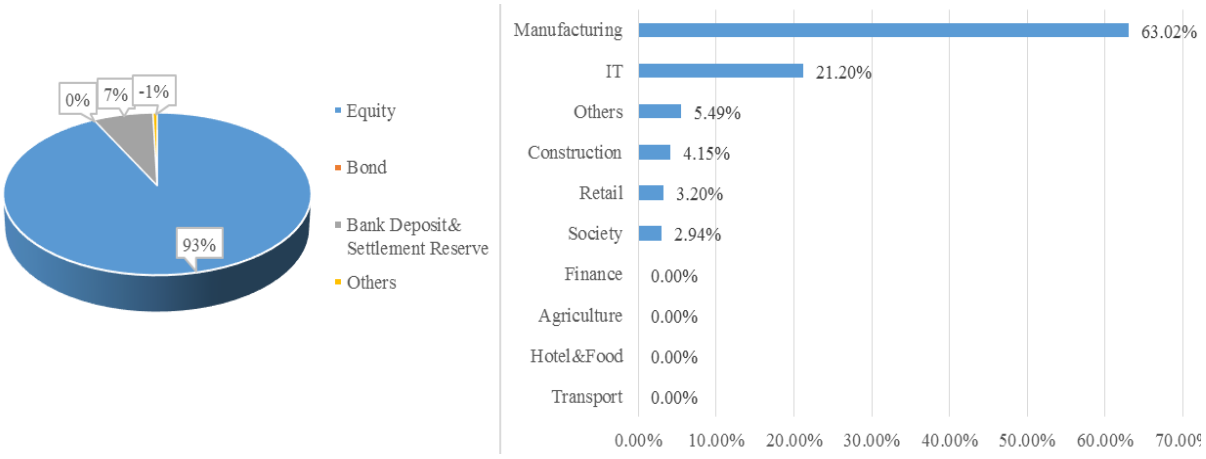


Source: http://finance.sina.com.cn/fund/quotes/519694/bc.shtml, author.

BOCOM Schroder Blue Chip Stock Fund was issued in August, 2007. It is a large-cap equity fund. From the left side of Figure 4.4, the equity occupies the largest proportion of investing assets and the rest instruments are approximately average distributed. From the right side of Figure 4.4, like previous three equity funds, manufacturing industry is the main investing

area for BOCOM Schroder Blue Chip Stock Fund. The BOCOM Schroder Blue Chip Stock Fund is a blue chip fund, it mainly invests on blue chip stocks which are well-performed performance and stable development. This equity fund is aiming at a long-term stable growth with constant dividends and liquid assets.

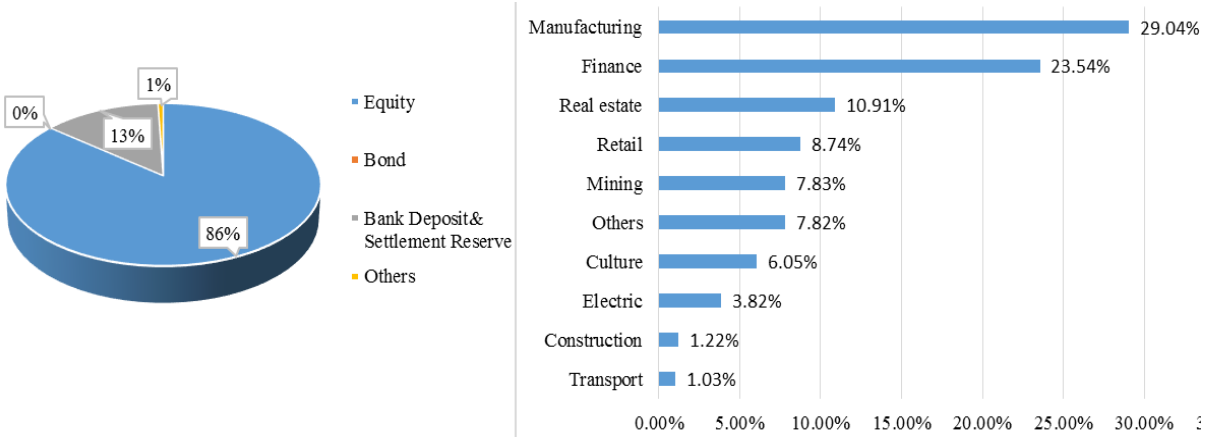
Figure 4.5 Asset Allocation and Industry Distribution of BOC Schroder Pioneer Stock Fund



Source: http://finance.sina.com.cn/fund/quotes/519698/bc.shtml, author.

BOC Schroder Pioneer Stock Fund was issued in April, 2009. It is a small-cap equity fund. From Figure 4.5, it is clear that most of assets are allocated in equity and manufacturing and IT industry are main investing industries. This equity fund invests on a constant grwoth potential equity, especially the middle and small company's equity which is in the fast grwoth period.

Figure 4.6 Asset Allocation and Industry Distribution of HSBC Jintrust Large-cap Equity Fund

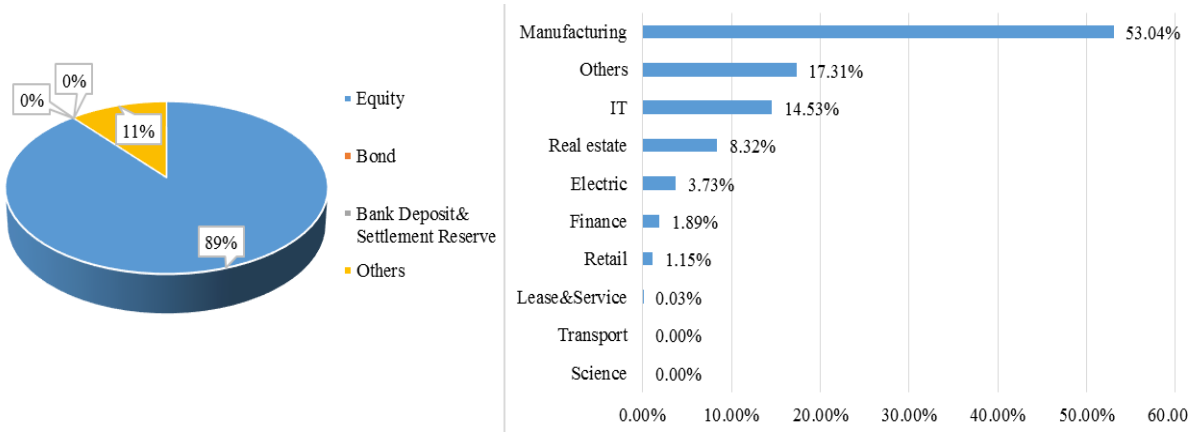


Source: http://finance.sina.com.cn/fund/quotes/540006/bc.shtml, author.

HSBC Jintrust Large-cap Equity Fund was issued in June, 2009. It is a large-cap equity

fund. From Figure 4.6, besides the largest proportion of assets is allocated in equity, the proportion of bank deposit and settlement reserve is also more than 13%. On the right side of Figure 4.6, the manufacturing and finance industry distribution are both over 20%. This equity fund mainly invests on leading large-cap blue chips with profit that has stable constant increasing. HSBC Jintrust Large-cap Equity Fund is aiming at dividend profit and long-term capital gains.

Figure 4.7 Asset Allocation and Industry Distribution of HSBC Jintrust Small/mid-cap Fund



Source: http://finance.sina.com.cn/fund/quotes/340006/bc.shtml, author.

HSBC Jintrust Small/mid-cap Equity Fund was issued in September, 2006. It is a middle-cap equity fund. From Figure 4.7, it is appearent that the assets are allocated in equity and other financial instruments. Near half of capital are invested to manufacturing industry. This equity fund aims at the competitive and undervalued company in order to charse for long-term capital gains.

Table 4.8 Dividends Payment of Selected Equity Funds (CNY/share)

340006	2012/9/13	2013/5/16	2014/7/17	2016/3/25		TOTAL
	1.11	0.686	0.47	0.48		2.746
519692	2007/12/20	2010/1/19	2014/1/14	2015/1/22	2016/1/15	0.806
	0.18	0.065	0.16	0.116	0.285	
519694	2009/1/1			2015/7/20		0.215
	0.015			0.2		
519698	2010/1/20	2011/1/14	2014/1/14	2015/1/22	2016/1/20	0.404
	0.025	0.03	0.024	0.025	0.3	
540006	2010/1/20	2011/1/14	2014/1/14	2015/1/22	2016/1/20	0.404
	0.025	0.03	0.024	0.025	0.3	
540007	2010/12/6					0.02
	0.02					

Source: http://finance.sina.com.cn/, author.

Table 4.8 shows the dividends payment of six equity funds and total share profits. AIFMC

Global View Fund has the highest total share value. However, it does not mean that investors will get better returns if equity dividends get higher. Equity dividends is not an appropiate way to estimate the equity fund performance for investors. Therefore, it is necessary to apply new methods considering returns and risk. And the following content is going to describe the performance estimating by various measures.

4.2 Peer Group Comparison Method

Peer group comparison is an early method which is on the basis of the rate of return. It collects the returns produced by a representative universe of investors over a specific period of time and displays them in a simple chart format (REILLY and BROWN, 2009). It also includes the comparison with periodic returns to two indexes of the overall market: SCI300 and NASDAQ Composite index. This section contains the calculations of annual returns of the six selected equity funds and market benchmarks. The average net asset values of equity funds are shown in the Table 4.9.

Table 4.9 Average Net Asset Value of the Equity Funds (CNY/share)

	AIFMCGV	BSGMA	BSBCS	BSPS	HJLE	HJSE
2010	3.36	2.53	0.82	1.17	1.09	1.01
2011	3.52	2.58	0.75	1.12	1.09	0.89
2012	2.86	2.43	0.67	1.02	0.98	0.72
2013	1.93	3.08	0.74	1.18	1.08	0.80
2014	1.69	3.02	0.73	1.21	1.13	0.87
2015	2.27	4.65	0.98	1.80	2.11	1.30

Source: Author’s calculation

Firstly, basing on the data from monthly net asset value of selected equity funds, it is easy to get average net asset value for six years. It is the average of net asset value of each month for every year. Then the return of the equity funds can be computed in Table 4.10.

Table 4.10 Annual Return of the Equity Funds (2010-2014) (%)

	AIFMCGV	BSGMA	BSBCS	BSPS	HJLE	HJSE
2010	4.82	1.88	-9.11	-4.37	-0.05	-11.57
2011	-18.82	-5.88	-10.02	-8.65	-10.20	-18.96
2012	-32.38	26.64	10.38	14.99	10.27	10.70
2013	-12.76	-1.69	-2.25	2.66	5.23	8.66
2014	34.51	53.79	34.91	49.00	86.77	49.60

Source: Author's calculation

Secondly, from annual net asset value of six selected equity funds, the return can be calculated as growth rate of net asset value. Therefore, there are five figures of return in each year for six selected equity funds stated in Table 4.11.

Table 4.11 Average Annual Return and Standard Deviation of Selected Equity Funds

	AIFMCGV	BSGMA	BSBCS	BSPS	HJLE	HJSE
Annual R_i	-4.92%	14.95%	4.78%	10.73%	18.40%	7.69%
Annual σ	0.26	0.25	0.19	0.23	0.39	0.27

Source: Author's calculation

Next, from the results of annual returns of selected equity funds, the annual returns and standard deviation can be computed by Excel function. The results can be ranked from high to low. HSBC Jintrust Large-cap Equity Fund has 18.40% annual return during past five years, which is the highest return among these equity funds. The return of BOCOM Schroder Growth Mixed A and BOC Schroder Pioneer Stock Fund are also higher than 10%. The lowest annual return is AIFMC Global View Fund with the return lower than zero. From the view of annual standard deviation, it is clear that HSBC Jintrust Large-cap Equity Fund has the highest risk with the highest annual return. And annual standard deviation of the rest equity funds are ranked as similar as annual return. All of these results will be displayed in Table 4.14 as comparison.

Figure 4.12 Price and Annual Return of Market Benchmark (2010-2015)

	CSI300 (CNY/share)		NASDAQ (USD/share)	
	Market index	Return	Market index	Return
2010	3048.99	-	2379.96	-
2011	2895.04	-5.05%	2710.05	13.87%
2012	2418.45	-16.46%	3011.58	11.13%
2013	2430.69	0.51%	3655.28	21.37%
2014	2416.52	-0.58%	4459.13	21.99%
2015	3864.72	59.93%	4959.77	11.23%

Source: https://www.yahoo.com/, author.

The method of calculating of market benchmark is as similar as previous steps. From Figure 4.12, there are market index and return of two market benchmark from 2011 to 2015. It is clear that during these five years, the return of Chinese security market is suffering great ups and downs. However, the market index NASDAQ in the USA is relatively stable and keeps more than 10% growth rate during past five years.

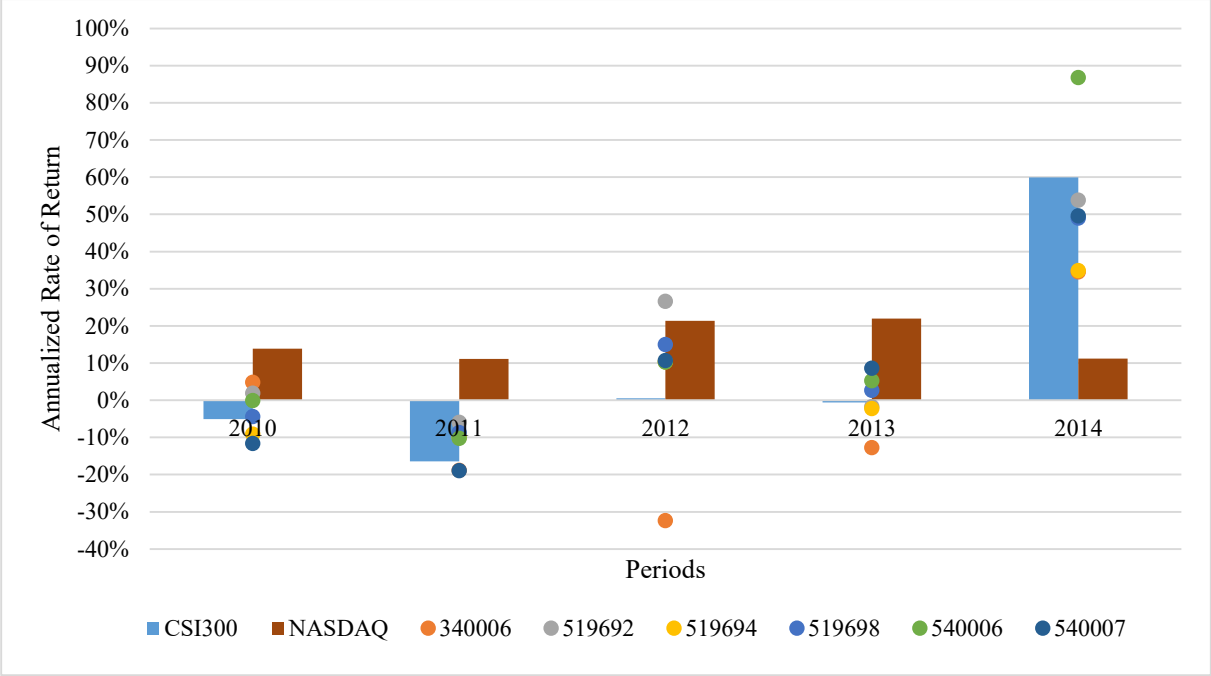
Table 4.13 Average Annual Return and Standard Deviation of Market Benchmark

	CSI300	NASDAQ
Annual R_i	7.67%	15.92%
Annual σ	0.30	0.05

Source: Author's calculation

Results of Table 4.13 shows the different situation in China and the USA security market. Chinese security market has great fluctuation with lower return during past five years. This is because Chinese security market system is not mature enough so that the ability of controlling and defensing fluctuation is not good. As one of largest index in the USA security market, NASDAQ performs more stable and believable. The return and fluctuation of NASDAQ are both better than the situation in China.

Figure 4.14 Peer Group Comparison between Equity Funds and Market Benchmarks



From Figure 4.14, it is obvious that there are some equity funds with higher annual rate of returns than two benchmarks. In 2010, all of equity funds' performance are worse than NASDAQ Composite index but BOC Schroder Pioneer Stock Fund (519698), BOCOM Schroder Blue Chip Stock Fund (519694) and HSBC Jintrust Small/mid-cap Equity Fund (540007) perform better than SCI300. In year of 2011, only HSBC Jintrust Small/mid-cap Equity Fund (540007) performs worse than SCI300 but all of equity funds perform worse than NASDAQ Composite index. In 2012, AIFMC Global View Fund (340006) performs worse than market benchmark. The rest equity funds behave better than market benchmark. In 2013, six selected equity funds behave less volatile, but all of them perform worse than NASDAQ Composite index. In 2014, due to the fact of increasing in SCI300, six selected equity funds have great increased and they perform even better than NASDAQ Composite index. From pervious comparison, the best performance equity fund is HSBC Jintrust Large-cap Equity Fund (540006), which performs better than CSI300 during five years. And BOCOM Schroder Growth Mixed A (519692) and BOC Schroder Pioneer Stock Fund (519698) also perform well comparing to the rest equity funds.

As comparing and evaluating portfolio performance before, peer group comparison just focus on comparison of returns and regardless of risks. Therefore, it is necessary to make

composite portfolio performance. In the following content, it will use various measures to estimate the portfolio performance.

4.3 Sharpe Ratio Measure

Sharpe ratio is in the framework of the capital asset pricing model (CAPM) and the results can be dealt with the capital market line (CML). Under Sharpe ratio measure, investors seek to maximize the expected return and if the Sharpe ratio is higher, it means the better of this equity fund.

Table 4.15 Results of Sharpe Ratio Measure

	AIFMCGV	BSGMA	BSBCS	BSPS	HJLE	HJSE	Benchmark
R_p	-0.11%	1.04%	0.31%	1.09%	1.26%	0.57%	0.35%
R_f	0.3%						
σ_p	0.084	0.072	0.070	0.082	0.068	0.073	0.076
Sharpe ratio	-5.05%	10.17%	-0.07%	9.47%	13.97%	3.45%	0.51%

Source: Author's calculation

According to database of monthly net asset value and monthly return, the average return and standard deviation of each equity fund can be computed by Excel, using Formula 3.1. And the procedure of calculating market benchmarks is the same as equity fund.

From previous introduction of Sharpe ratio, there is one aim of it is to measure the total risk of the portfolio. And the numerator of Sharpe ratio is equity fund's risk premium, which shows the risk premium return earned per unit of total risk. Therefore, for example, HSBC Jintrust Large-cap Equity Fund has 1.26% return earned per unit of total risk.

From Table 4.15, HSBC Jintrust Large-cap Equity Fund has the highest Sharpe ratio but AIFMC Global View Fund is the lowest. The reasons causing this results are the high return or low standard deviation. And this condition is fit to HSBC Jintrust Large-cap Equity Fund. HSBC Jintrust Large-cap Equity Fund has the highest return and the lowest standard deviation. As for AIFMC Global View Fund, due to the negative value of return and return is less than

risk free rate, the Sharpe ratio is also negative even though the standard deviation is high. The comparison and performance ranking are illustrated in Figure 4.16.

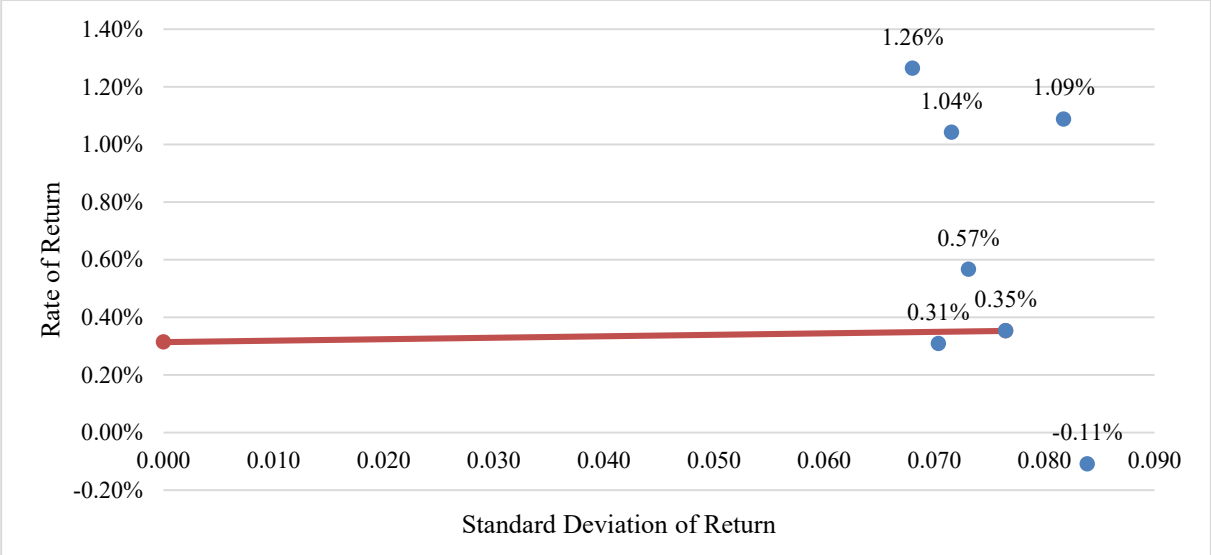
Table 4.16 Performance Ranking by Sharpe Ratio Measure

	Sharpe ratio	Ranking	Comparison with benchmark
AIFMC Global View Fund	-5.05%	7	underperformed
BOCOM Schroder Growth Mixed A	10.17%	2	outperformed
BOCOM Schroder Blue Chip Stock Fund	-0.07%	6	underperformed
BOC Schroder Pioneer Stock Fund	9.47%	3	outperformed
HSBC Jintrust Large-cap Equity Fund	13.97%	1	outperformed
HSBC Jintrust Small/mid-cap Equity Fund	3.45%	4	outperformed
Benchmark	0.51%	5	-

Source: Author's calculation

From results of each equity funds and benchmark, it is easy to rank the Sharpe ratio from high to low. Obviously, HSBC Jintrust Large-cap Equity Fund is ranked the best performance. If comparing with benchmark, there are two equity funds, AIFMC Global View Fund and BOCOM Schroder Blue Chip Stock Fund, not performing better than market benchmark. This is because the return of these two equity funds are lower than risk free rate. Given the selected equity funds performance, it is possible to draw the CML as following Figure 4.17.

Figure 4.17 Plot of Performance on CML (Sharpe Ratio Measure)



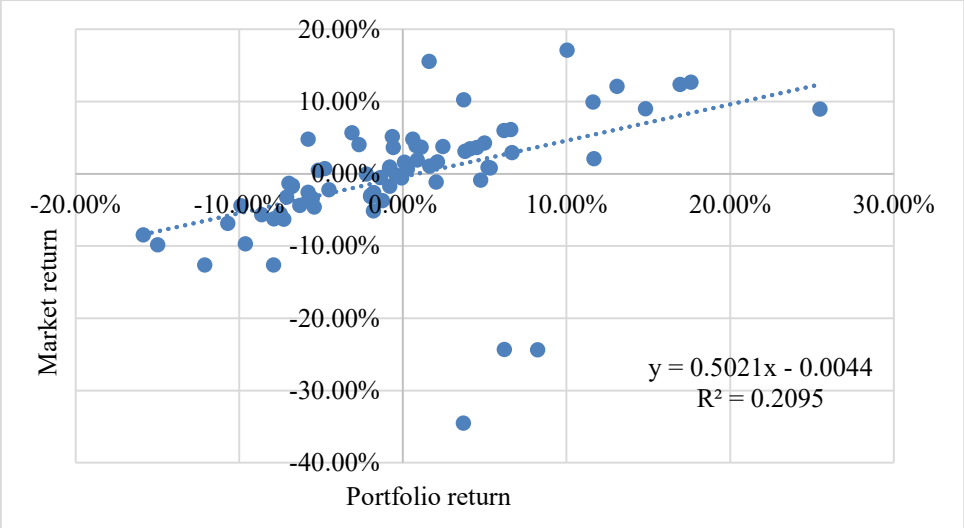
Source: Author's calculation.

From Figure 4.17, six selected equity funds returns are all displayed on plot. The return of AIFMC Global View Fund and BOCOM Schroder Blue Chip Stock Fund are below the CML line, whereas the rest equity funds are above the line, indicating superior risk-adjusted performance. As previous chapter description, Sharpe ratio is only focusing on the estimation of total risk of portfolio, therefore it is necessary to consider the systematic risk for more accurate performance evaluation in next content.

4.4 Treynor Ratio Measure

Treynor developed a characteristic line in order to identify risk causing by market fluctuations. And the slope of this line is the portfolio's beta coefficient. If the slope (beta) is higher, it means the higher of market risk and more sensitive reaction to market return. Treynor ratio measure can apply to all investors regardless of their risk preferences (REILLY and BROWN, 2009). Therefore, firstly it is necessary to estimate the beta coefficient for each equity funds by regression analysis.

Figure 4.18 Beta Coefficient Estimation of AIFMC Global View Fund



Source: Author's calculation

If marking all figures of AIFMC Global View Fund (340006) on the table and making regression analysis, it is easy to obtain the trend line and regression equation (y=0.5021x-0.0044) for this equity fund. In Figure 4.18, the beta coefficient is 0.5021. Then it is necessary

to test if the beta coefficient is statistically significant. Due to each portfolio return has 72 figures, it is clear to use Z distribution.

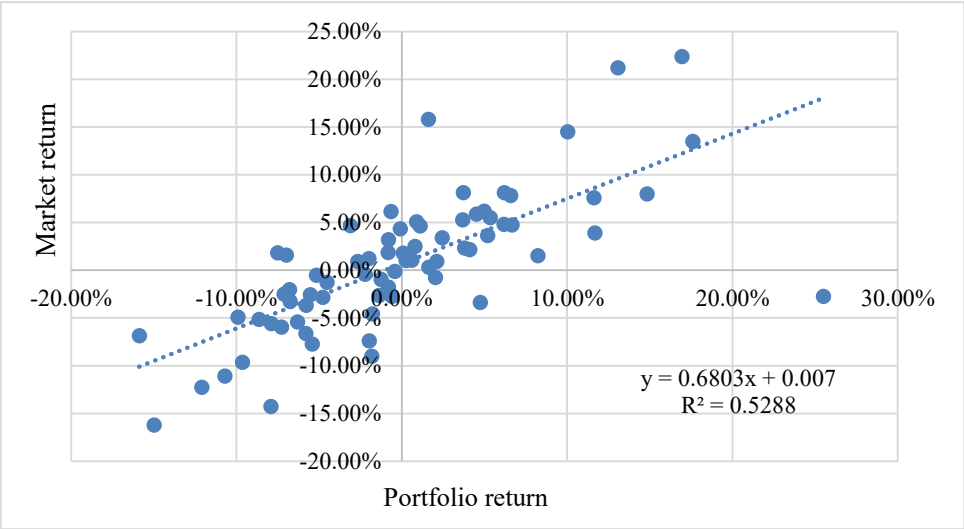
Table 4.19 Hypothesis testing of beta coefficient for AIFMC Global View Fund

SUMMARY OUTPUT						
Regression Statistics						
Multiple R	0.4578					
R Square	0.2095					
Adjusted R Square	0.1983					
Standard Error	0.0751					
Observations	72					
ANOVA						
	df	SS	MS	F	Significance F	
Regression	1	0.10472	0.10472	18.55652	0.00005	
Residual	70	0.39504	0.00564			
Total	71	0.49976				
	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	-0.0044	0.00885	-0.50038	0.61837	-0.02209	0.01323
beta (340006)	0.5021	0.11656	4.30773	0.00005	0.26963	0.73457

Source: Author's calculation.

The significant level is 5%. The hypothesis of H0 is beta=0, H1 is beta≠0. From the calculation of Excel function, the critical value is -1.95 and 1.95. T-statistic value is 4.3 which is in the tail. Therefore, we reject H0, beta coefficient is not equal to 0.

Figure 4.20 Beta Coefficient Estimation of BOCOM Schroder Growth Mixed A



Source: Author's calculation

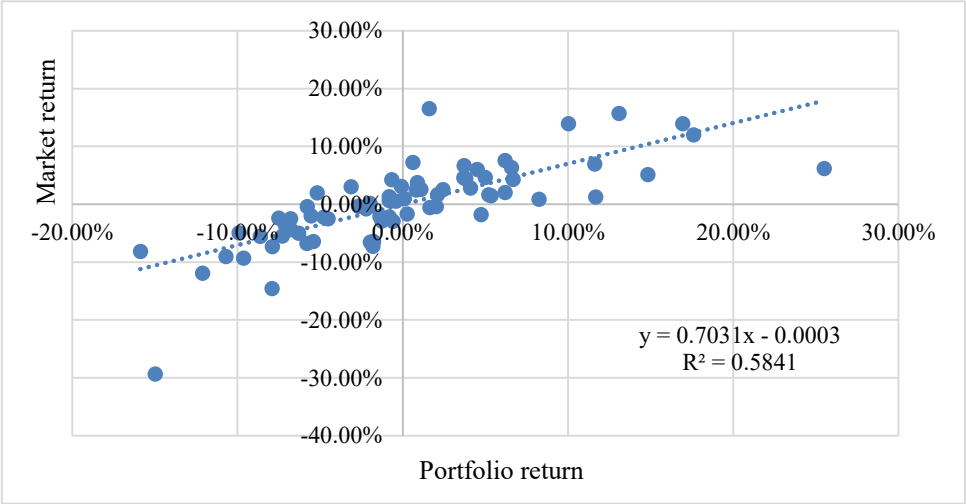
From Figure 4.20, the data of BOCOM Schroder Growth Mixed A (519692) is more positive correlation. The regression equation is y=0.6803x+0.007. Therefore, the beta coefficient is 0.6803. Then it is necessary to test if the beta coefficient is statistically significant. Due to each portfolio return has 72 figures, it is clear to use Z distribution.

Table 4.21 Hypothesis testing of beta coefficient for BOCOM Schroder Growth Mixed A

SUMMARY OUTPUT						
Regression Statistics						
Multiple R	0.7272					
R Square	0.5288					
Adjusted R Square	0.5220					
Standard Error	0.0495					
Observations	72					
ANOVA						
	df	SS	MS	F	Significance F	
Regression	1	0.1923	0.1923	78.5416	0.0000	
Residual	70	0.1714	0.0024			
Total	71	0.3636				
	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	0.0070	0.0058	1.2032	0.2330	-0.0046	0.0186
beta (519692)	0.6803	0.0768	8.8624	0.0000	0.5272	0.8334

The significant level is 5%. The hypothesis of H_0 is beta=0, H_1 is beta≠0. From the calculation of Excel function, the critical value is -1.95 and 1.95. T-statistic value equals to 8.86 which is in the tail. Therefore, we reject H_0, beta coefficient is not equal to 0.

Figure 4.22 Beta Coefficient Estimation of BOCOM Schroder Blue Chip Stock Fund



Source: Author's calculation

In Figure 4.22, BOCOM Schroder Blue Chip Stock Fund (519694) is positive correlation with regression equation y=0.7031x-0.0003. Therefore beta coefficient is 0.7031. Then it is necessary to test if the beta coefficient is statistically significant. Due to each portfolio return has 72 figures, it is clear to use Z distribution.

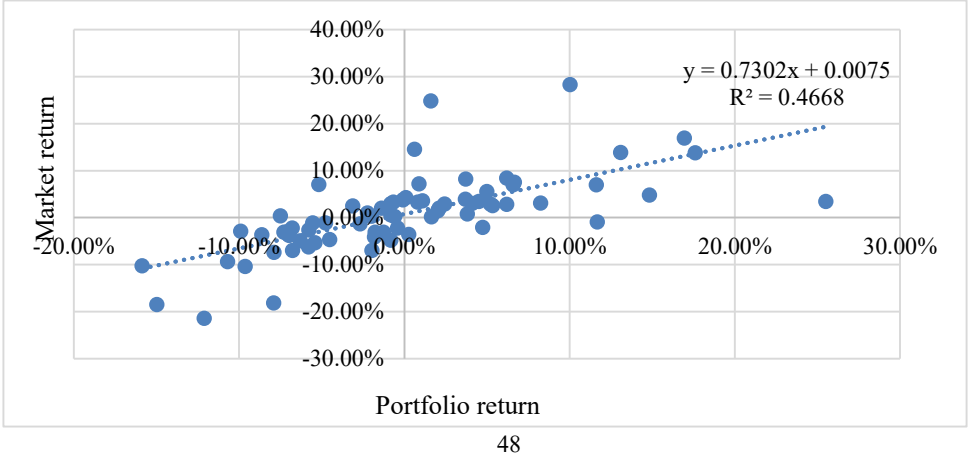
Table 4.23 Hypothesis testing of beta coefficient for BOCOM Schroder Blue Chip Stock Fund

SUMMARY OUTPUT						
Regression Statistics						
Multiple R	0.7643					
R Square	0.5841					
Adjusted R Square	0.5782					
Standard Error	0.0457					
Observations	72					
ANOVA						
	df	SS	MS	F	Significance F	
Regression	1	0.2054	0.2054	98.3129	0.0000	
Residual	70	0.1462	0.0021			
Total	71	0.3516				
	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	-0.0003	0.0054	-0.0597	0.9526	-0.0111	0.0104
beta (519694)	0.7031	0.0709	9.9153	0.0000	0.5617	0.8445

Source: Author's calculation.

The significant level is 5%. The hypothesis of H_0 is beta=0, H_1 is beta≠0. From the calculation of Excel function, the critical value is -1.95 and 1.95. T-statistic value equals to 9.92 which is in the tail. Therefore, we reject H_0, beta coefficient is not equal to 0.

Figure 4.24 Beta Coefficient Estimation of BOC Schroder Pioneer Stock Fund



Source: Author's calculation

Figure 4.24 shows the regression analysis of BOC Schroder Pioneer Stock Fund (519698). From trend line and estimation equation y=0.7302x+0.0075, it is obvious that beta coefficient is 0.7302. Then it is necessary to test if the beta coefficient is statistically significant. Due to each portfolio return has 72 figures, it is clear to use Z distribution.

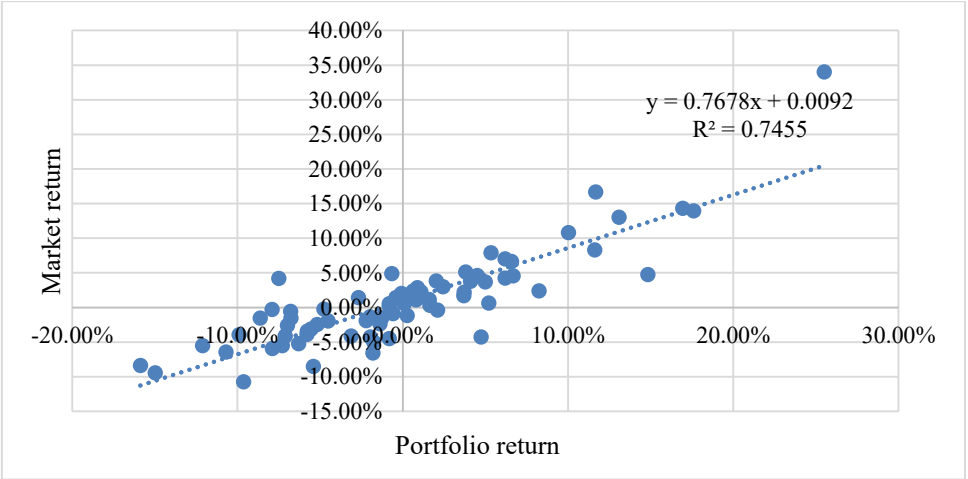
Table 4.25 Hypothesis testing of beta coefficient for BOC Schroder Pioneer Stock Fund

Regression Statistics						
Multiple R	0.6833					
R Square	0.4668					
Adjusted R Square	0.4592					
Standard Error	0.0601					
Observations	72					
ANOVA						
	df	SS	MS	F	Significance F	
Regression	1	0.2215	0.2215	61.2936	0.0000	
Residual	70	0.2530	0.0036			
Total	71	0.4745				
	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	0.0075	0.0071	1.0523	0.2963	-0.0067	0.0216
beta (519698)	0.7302	0.0933	7.8290	0.0000	0.5442	0.9163

Source: Author's calculation.

The significant level is 5%. The hypothesis of H_0 is beta=0, H_1 is beta≠0. From the calculation of Excel function, the critical value is -1.95 and 1.95. T-statistic value equals to 7.83 which is in the tail. Therefore, we reject H_0, beta coefficient is not equal to 0.

Figure 4.26 Beta Coefficient Estimation of HSBC Jintrust Large-cap Equity Fund



Source: Author's calculation

The regression analysis of HSBC Jintrust Large-cap Equity Fund (540006) shows the positive correlation, and regression equation is y=0.7678x+0.0092. Therefore the beta coefficient is 0.7678. Then it is necessary to test if the beta coefficient is statistically significant. Due to each portfolio return has 72 figures, it is clear to use Z distribution.

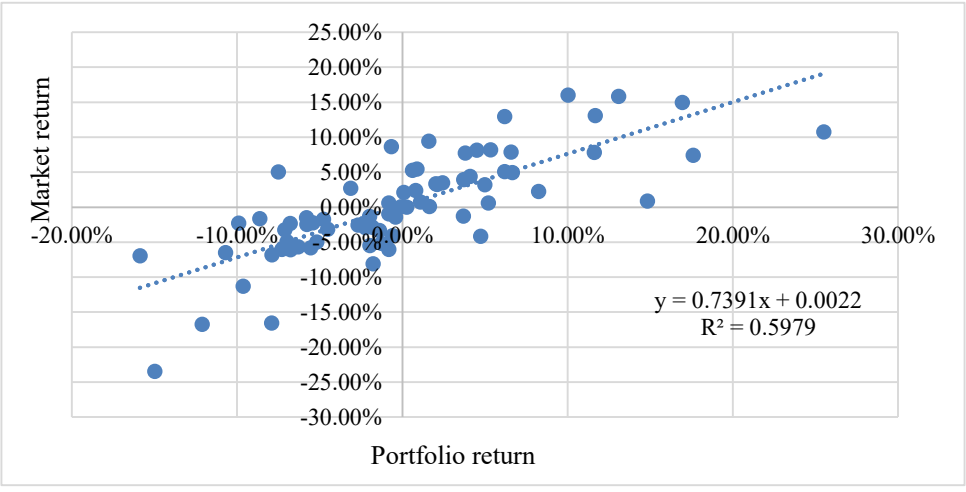
Table 4.27 Hypothesis testing of beta coefficient for HSBC Jintrust Large-cap Equity Fund

SUMMARY OUTPUT						
Regression Statistics						
Multiple R	0.8634					
R Square	0.7455					
Adjusted R Square	0.7418					
Standard Error	0.0346					
Observations	72					
ANOVA						
	df	SS	MS	F	Significance F	
Regression	1	0.2449	0.2449	205.0092	0.0000	
Residual	70	0.0836	0.0012			
Total	71	0.3285				
	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	0.0092	0.0041	2.2595	0.0270	0.0011	0.0173
beta (540006)	0.7678	0.0536	14.3181	0.0000	0.6609	0.8748

Source: Author's calculation.

The significant level is 5%. The hypothesis of H_0 is beta=0, H_1 is beta≠0. From the calculation of Excel function, the critical value is -1.95 and 1.95. T-statistic value equals to 14.31 which is in the tail. Therefore, we reject H_0, beta coefficient is not equal to 0.

Figure 4.28 Beta Coefficient Estimation of HSBC Jintrust Small/mid-cap Equity Fund



Source: Author's calculation

From Figure 4.28, the data of HSBC Jintrust Small/mid-cap Equity Fund (540007) shows the regression equation is y=0.7391x+0.0022, therefore beta coefficient is 0.7391. Then it is necessary to test if the beta coefficient is statistically significant. Due to each portfolio return has 72 figures, it is clear to use Z distribution.

Table 4.29 Hypothesis testing of beta coefficient for HSBC Jintrust Small/mid-cap Equity Fund

Regression Statistics						
Multiple R	0.7733					
R Square	0.5979					
Adjusted R Square	0.5922					
Standard Error	0.0467					
Observations	72					
ANOVA						
	df	SS	MS	F	Significance F	
Regression	1	0.2269	0.2269	104.1069	0.0000	
Residual	70	0.1526	0.0022			
Total	71	0.3795				
	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	0.0022	0.0055	0.4066	0.6855	-0.0087	0.0132
beta (540007)	0.7391	0.0724	10.2033	0.0000	0.5947	0.8836

Source: Author's calculation.

The significant level is 5%. The hypothesis of H_0 is beta=0, H_1 is beta≠0. From the calculation of Excel function, the critical value is -1.95 and 1.95. T-statistic value equals to 10.20 which is in the tail. Therefore, we reject H_0, beta coefficient is not equal to 0. And the entire results of equity funds beta coefficients will be displayed in the following Figure 4.24.

Table 4.30 Results Summarization of beta and R^2 coefficient

	β	R^2
AIFMC Global View Fund	0.502	20.95%
BOCOM Schroder Growth Mixed A	0.680	52.88%
BOCOM Schroder Blue Chip Stock Fund	0.703	58.41%
BOC Schroder Pioneer Stock Fund	0.730	46.68%
HSBC Jintrust Large-cap Equity Fund	0.768	74.55%
HSBC Jintrust Small/mid-cap Equity Fund	0.739	59.79%

Source: Author's calculation and collection

In Table 4.30, the R-squared values are estimated as well. R-squared reflects the influence of fund performance if some changes to benchmark. The higher of R-squared value, the more possibilities of benchmark to influence fund performance. In addition, R-squared value is also used to evaluate the accuracy of beta and alpha coefficients. Generally, the higher of fund R-squared value, the higher accurate of these two coefficients. Beta coefficient can apparently reflect the fluctuation of fund if R-squared gets closer to one. From results of Table 4.30, it is clear that HSBC Jintrust Large-cap Equity Fund has the largest R-squared value whereas AIFMC Global View Fund shows the lowest R-squared value, which means the fluctuations of this equity fund causing by benchmark changing is very low. Based on beta coefficient estimation, it is easy to apply data into the Treynor ratio measure.

Table 4.31 Results of Treynor Ratio Measure

	AIFMCGV	BSGMA	BSBCS	BSPS	HJLE	HJSE	Benchmark
R_p	-0.11%	1.04%	0.31%	1.09%	1.26%	0.57%	0.35%
R_f	0.3%						
β	0.502	0.502	0.502	0.502	0.502	0.502	1.000
Treynor ratio	-0.84%	1.07%	-0.01%	1.06%	1.24%	0.34%	0.04%

Source: Author's calculation

According to database of monthly net asset value and monthly return, the average return of each equity fund can be computed by Excel. Besides that, it is necessary to use beta coefficient in the numerator. Then applying all data by Formula 3.2 of Treynor ratio. The procedure of calculating market benchmarks is the same as equity fund by Formula 3.3.

From previous introduction of Treynor ratio, one aim of it is to compute the system risk of the portfolio. And the numerator of Treynor ratio is equity fund's risk premium, which shows the risk premium return earned per unit of risk. Under Treynor ratio, it implicitly assumes a completely diversified portfolio.

From Table 4.31, BOC Schroder Pioneer Stock Fund has the highest Treynor ratio but AIFMC Global View Fund is the lowest. The reasons causing this results are high return or low

beta coefficient, which are mathematical similar as Sharpe ratio. And this condition is fit to BOC Schroder Pioneer Stock Fund. BOC Schroder Pioneer Stock Fund has a high return and the low beta coefficient. As for AIFMC Global View Fund, due to the negative value of return and return is less than risk free rate, the Treynor ratio is also negative even though the beta coefficient is low. Due to the market benchmark portfolio characteristic, the beta coefficient is equal to one. And to sum up all results of Treynor ratio, the equity funds can be ranked as follows figure.

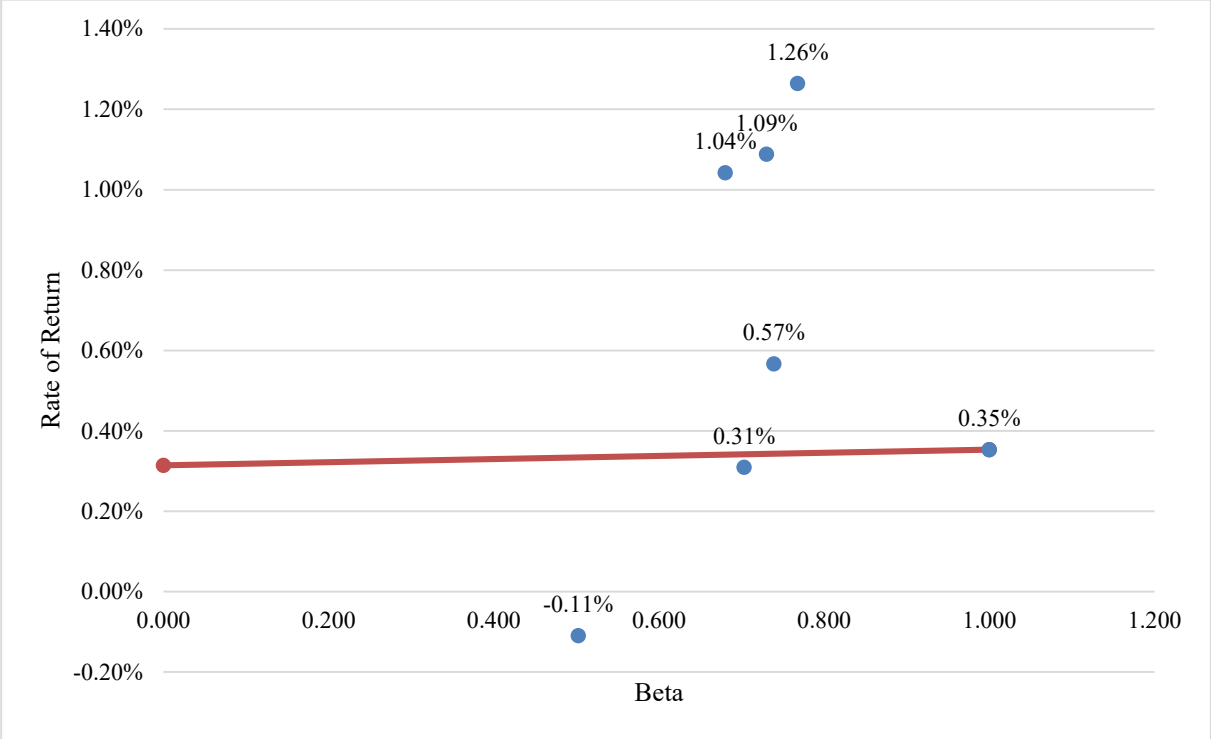
Table 4.32 Performance Ranking by Treynor Ratio Measure

	Treynor ratio	Ranking	Comparison with market
AIFMC Global View Fund	-0.84%	7	underperformed
BOCOM Schroder Growth Mixed A	1.07%	3	outperformed
BOCOM Schroder Blue Chip Stock Fund	-0.01%	6	underperformed
BOC Schroder Pioneer Stock Fund	1.06%	1	outperformed
HSBC Jintrust Large-cap Equity Fund	1.24%	2	outperformed
HSBC Jintrust Small/mid-cap Equity Fund	0.34%	4	outperformed
Market Benchmark	0.04%	5	-

Source: Author's calculation

From results of each portfolios and benchmark, it is easy to rank the Treynor Ratio from high to low. Obviously, BOC Schroder Pioneer Stock Fund is ranked the best performance. If comparing with benchmark, there are two equity funds, AIFMC Global View Fund and BOCOM Schroder Blue Chip Stock Fund, not performing better than market benchmark. Given the selected equity funds performance, it is possible to draw the SML as following Figure 4.33.

Figure 4.33 Plot of Performance on SML (Treynor Ratio Measure)



From Figure 4.33, six selected equity funds return are all displayed on plot. The return of AIFMC Global View Fund and BOCOM Schroder Blue Chip Stock Fund are below the SML line, whereas the rest equity funds are above the line, indicating superior risk-adjusted performance.

4.5 Jensen's Alpha Measure

Jensen's alpha measure is also built up on the capital asset pricing model (CAPM), which calculates the expected one-period return on portfolio. The α indicates whether a manager has superior ($\alpha>0$) or inferior ($\alpha<0$) ability in predicting market turns or selecting undervalued equity fund, or both. Under this measure, the Jensen's alpha uses the Single-Index Market Model and its equation can be stated as a linear function of the risk-free rate of return during the period and plus a risk premium which depends on system risk of equity fund.

Table 4.34 Results Summarization of alpha, beta and R^2 coefficient

	α	β	R^2
AIFMC Global View Fund	-0.0044	0.502	20.95%
BOCOM Schroder Growth Mixed A	0.0801	0.680	52.88%
BOCOM Schroder Blue Chip Stock Fund	0.0752	0.703	58.41%
BOC Schroder Pioneer Stock Fund	0.0859	0.730	46.68%
HSBC Jintrust Large-cap Equity Fund	0.0917	0.768	74.55%
HSBC Jintrust Small/mid-cap Equity Fund	0.0816	0.739	59.79%

Source: Author's calculation

Table 4.34 shows the summarization of coefficients estimation for six selected equity funds. The α values are estimated by the equation $\alpha_p = R_p - R_f - \beta_p \left(R_m - R_f \right)$. Therefore, it is clear to know how much of the managed portfolio's return is attributable to the manager's ability to derive above-average returns adjusted for risk. From Figure 4.28, AIFMC Global View Fund can be regarded as inferior manager whereas the rest equity funds have superior managers which stands for the managers are good at either predicting market turns or equity funds selection or both to some degree.

Table 4.35 Results of Jensen's Alpha Measure

	AIFMCGV	BSGMA	BSBCS	BSPS	HJLE	HJSE
β	0.502	0.502	0.502	0.502	0.502	0.502
R_m	0.4%					
R_f	0.31%					
Jensen's alpha	-0.0044	0.0801	0.0752	0.0859	0.0917	0.0816
R_p	0.330%	0.344%	0.346%	0.339%	0.352%	0.346%

Source: Author's calculation

From results of Table 4.35, the results of R_p can be calculated by Formula 3.7 and compared. Due to the fact that managers will be superior in their investment if the Jensen's alpha is higher. Therefore, for example, HSBC Jintrust Large-cap Equity Fund which has the

highest Jensen's alpha, is also most sensitive to market reaction (largest beta coefficient) and has the highest return. Whereas the AIFMC Global View Fund does not perform well and one of reasons is the negative value of Jensen's alpha which means the fund manager is not good at market prediction or fund selection. And according to results of return of each equity fund, it is possible to make ranking in following figure.

Table 4.36 Performance Ranking by Jensen's Alpha Measure

	Jensen's alpha	Ranking
AIFMC Global View Fund	-0.0044	6
BOCOM Schroder Growth Mixed A	0.0801	4
BOCOM Schroder Blue Chip Stock Fund	0.0752	5
BOC Schroder Pioneer Stock Fund	0.0859	2
HSBC Jintrust Large-cap Equity Fund	0.0917	1
HSBC Jintrust Small/mid-cap Equity Fund	0.0816	3

Source: Author's calculation

From the ranking of portfolio return, it is obvious that manager of HSBC Jintrust Large-cap Equity Fund is the best with the alpha value. However, the ability of equity fund manager is not as good as manager from HSBC Jintrust Large-cap Equity Fund. Therefore, AIFMC Global View Fund is the worst performance under this measure.

4.6 Information Ratio Measure

Information ratio measures the difference of portfolio's average return in excess of market benchmark which is divided by standard deviation of the excess return. Therefore, it is necessary to estimate the return differences between market benchmark and selected equity funds and the standard deviation of the excess return during the period (REILLY and BROWN, 2009).

Table 4.37 Excess Return and Risk between Equity Funds and Benchmark

	AIFMCGV	BSGMA	BSBCS	BSPS	HJLE	HJSE
Excess return	-0.46%	0.69%	-0.04%	0.73%	0.91%	0.21%
σ_e	0.0838	0.0549	0.0507	0.0632	0.0386	0.0505

Source: Author's calculation

From results of Figure 4.37, it is obvious that HSBC Jintrust Large-cap Equity Fund has the highest excess return and BOCOM Schroder Blue Chip Stock Fund and AIFMC Global View Fund have negative excess return. It is same as previous measures' results that equity fund has better return if standard deviation of excess return gets lower. After applying all figures into Information ratio formula 3.8, results are listed in Figure 4.38.

Table 4.38 Results and Performance Ranking by Information Ratio Measure

	Information ratio	Ranking
AIFMC Global View Fund	-5.52%	6
BOCOM Schroder Growth Mixed A	12.56%	2
BOCOM Schroder Blue Chip Stock Fund	-0.86%	5
BOC Schroder Pioneer Stock Fund	11.64%	3
HSBC Jintrust Large-cap Equity Fund	23.58%	1
HSBC Jintrust Small/mid-cap Equity Fund	4.23%	4

Source: Author's calculation

Figure 4.38 shows the final results of Information ratio and selected equity funds ranking. HSBC Jintrust Large-cap Equity Fund is ranked the first position with 23.58%. And Information ratio of BOCOM Schroder Growth Mixed A and BOC Schroder Pioneer Stock Fund are 12.56% and 11.64%, which are ranked as the second and third position. The information ratio of BOCOM Schroder Blue Chip Stock Fund and AIFMC Global View Fund are -0.86% and -5.52%, which are negative value. This is because the equity fund return is less than market benchmark return.

Figure 4.39 Annualized Information Ratio and Performance Ranking

	Annualized Information ratio	Ranking
AIFMC Global View Fund	-19.12%	6
BOCOM Schroder Growth Mixed A	43.50%	2
BOCOM Schroder Blue Chip Stock Fund	-2.98%	5
BOC Schroder Pioneer Stock Fund	40.31%	3
HSBC Jintrust Large-cap Equity Fund	81.70%	1
HSBC Jintrust Small/mid-cap Equity Fund	14.66%	4

Source: Author's calculation

Due to the fact that Information ratio is associated with the market benchmark and it is usually used when comparing return based on the same market benchmark. The Information ratio is usually annualized by the square root of the number of observations per year (REILLY and BROWN, 2009). And it can be computed by Formula 3.10.

4.7 Summary of Performance Measures for the Equity Funds

The overall results are listed in Figure 4.40 and it indicates the performance of equity funds better or worse than the market benchmark. The comparison includes the average annual rate of return, standard deviation, beta coefficient, R-square, Treynor ratio, Sharpe ratio, Jensen measure, Information ratio and its ranking.

Figure 4.40 Performance Measure for Selected Equity Funds

Fund	Annual return	σ	β	R^2	Treynor		Sharpe		Jensen (1 factor)		Infor-mation	
AIFMCGV	-0.049	-0.004	0.502	0.210	-0.008	6	-0.0505	6	-0.0044	6	-0.055	6
BSGMA	0.149	0.080	0.680	0.529	0.011	2	0.1017	2	0.0801	4	0.126	2
BSBCS	0.048	0.075	0.703	0.584	-0.0001	5	-0.0007	5	0.0752	5	-0.009	5
BSPS	0.107	0.086	0.730	0.467	0.011	3	0.0947	3	0.0859	2	0.116	3
HJLE	0.184	0.092	0.768	0.746	0.012	1	0.1397	1	0.0917	1	0.236	1
HJSE	0.077	0.082	0.739	0.598	0.003	4	0.0345	4	0.0816	3	0.042	4
Average	0.086	0.068	0.687	0.522	0.005		0.053		0.0684		0.076	
Market	0.077	0.300	1.000	1.000	0.0004		0.005					

(Significant level is 5%)

Source: Author's calculation

From Figure 4.40, R^2 is a measure of diversification. The closer to 1.00 of R^2, the more perfect diversification of the equity fund. The average R^2 in Figure 4.40 is 0.522 and the range is a little bit big, from 0.210 to 0.746. It means that some equity funds are not well diversified, such as AIFMC Global View Fund and BOC Schroder Pioneer Stock Fund.

From two risk measures (standard deviation and beta coefficient), it is clear that only HSBC Jintrust Large-cap Equity Fund has higher total risk than market benchmark and all of beta coefficient are less than 1.000.

The various performance measures can rank the equity funds by comparing final results. Rankings are listed in the slides next to each measure. From Figure 4.40, there are two AIFMC Global View Fund and BOCOM Schroder Blue Chip Stock Fund having lower Treynor and Sharpe ratio than market benchmark due to the less annul return. The ranking of Treynor ratio and Sharpe ratio is the same. The Jensen's alpha, which is under the Single-Index Market Model is negative within AIFMC Global View Fund and BOCOM Schroder Blue Chip Stock Fund. The mean Jensen's alpha value of 0.0756 means that the average manager is able to produce a return of about 7 basis points per month more than expected given risk level of equity fund.

The mean values of Sharpe ratio and Treynor ratio are higher than the market benchmark figure, which means these six selected equity funds generally perform better risk-adjusted performance than market benchmark during the same period (REILLY and BROWN, 2009).

4.8 Extensions of Performance Evaluation for Equity Funds

In this section, there will be two extensions to make performance evaluation for six selected equity funds. It will concern the equity fund's diversification level and "downside" risk in the following paragraph.

4.8.1 Components of Investment Performance

After the issuing of Treynor, Sharp and Jensen measure, Fama developed a measure to estimate the overall performance of a portfolio and it is equal to the excess return of portfolio. Basing on this theory, overall performance of six equity funds can be accessed by Formula 3.12 and 3.15 in Table 4.41.

Table 4.41 Overall Performance of the Equity Funds (Fama measure)

	Overall performance		Required return for risk	Total return
AIFMCGV	-0.46%	6	0.020%	0.3337%
BSGMA	0.69%	3	0.026%	0.3406%
BSBCS	-0.04%	5	0.027%	0.3415%
BSPS	0.73%	2	0.028%	0.3426%
HJLE	0.91%	1	0.030%	0.3440%
HJSE	0.21%	4	0.029%	0.3429%

Source: Author's calculation

From Table 4.41, results can be ranked from high to low. The overall performance is the difference between market benchmark return and equity fund return. Therefore, the higher of the results, the better of the overall performance of equity fund. HSBC Jintrust Large-cap Equity Fund has best performance whereas the overall performance of AIFMC Global View Fund and BOCOM Schroder Blue Chip Stock Fund are less than zero, which means the return of equity

fund is lower than market benchmark return. From the view of total return, HSBC Jintrust Large-cap Equity Fund is also ranked best performance due to the highest required return for risk. In addition, the overall performance of equity fund can also be explained as the sum of portfolio risk and selectivity. Therefore, the results of selectivity computing by Formula 3.13 are listed in the following Table 4.41.

Table 4.42 Selectivity Evaluation of Selected Equity Funds

	Selectivity
AIFMC Global View Fund	-0.48%
BOCOM Schroder Growth Mixed A	0.66%
BOCOM Schroder Blue Chip Stock Fund	-0.07%
BOC Schroder Pioneer Stock Fund	0.71%
HSBC Jintrust Large-cap Equity Fund	0.88%
HSBC Jintrust Small/mid-cap Equity Fund	0.18%

Source: Author's calculation

Selectivity is the vertical distance between the return of equity fund and market benchmark return, which is similar to Treynor ratio in this thesis. From the results of Table 4.41, it is clear that selectivity of HSBC Jintrust Large-cap Equity Fund is the highest and it means there are 0.87% return of this equity fund that available to an unmanaged equity fund with identical systematic risk (REILLY and BROWN, 2009). However, it is similar with Treynor ratio results that selectivity of AIFMC Global View Fund and BOCOM Schroder Blue Chip Stock Fund are negative. This is because the return of these two equity funds are lower than market benchmark return. What is more, after evaluating selectivity of equity fund, it is necessary to evaluate the diversification of each equity fund.

Table 4.43 Diversification Evaluation of Selected Equity Funds

	Ratio of total risk	Return	Diversification
AIFMC Global View Fund	110%	0.396%	0.062%
BOCOM Schroder Growth Mixed A	94%	0.389%	0.049%
BOCOM Schroder Blue Chip Stock Fund	92%	0.389%	0.047%
BOC Schroder Pioneer Stock Fund	107%	0.395%	0.052%
HSBC Jintrust Large-cap Equity Fund	89%	0.388%	0.044%
HSBC Jintrust Small/mid-cap Equity Fund	96%	0.390%	0.047%

Source: Author's calculation

Firstly, the ratio of total risk means the proportion of standard deviation of each equity funds to market benchmark. The standard deviation of AIFMC Global View Fund and BOC Schroder Pioneer Stock Fund are higher than market benchmark, which means the total risk of these two equity funds are out of acceptable level. According to results of ratio of total risk by Formula 3.15, it is easy to obtain return of each equity funds. Due to the process of computing actual return of equity fund, it is necessary to add the ratio of total risk so that the final results will be averse. And this is what the manager will decide whether to choose this undervalued equity fund or not. From the view of diversification which is computed by Formula 3.16 and 3.17, AIFMC Global View Fund is the highest due to the higher actual return and lower combination of risk free and the market benchmark. Whereas, the diversification of HSBC Jintrust Large-cap Equity Fund is closer to zero, which means the difference between total risk and systematic risk is small. Therefore, HSBC Jintrust Large-cap Equity Fund is more diversified. The equity funds' gross selectivity is made up by diversification and selectivity, which will be shown in Table 4.44.

Table 4.44 Net Selectivity Evaluation of Selected Equity Funds

	Diversification	Selectivity	Net selectivity
AIFMC Global View Fund	0.062%	-0.48%	-0.544%
BOCOM Schroder Growth Mixed A	0.049%	0.66%	0.614%
BOCOM Schroder Blue Chip Stock Fund	0.047%	-0.08%	-0.118%
BOC Schroder Pioneer Stock Fund	0.052%	0.71%	0.655%
HSBC Jintrust Large-cap Equity Fund	0.044%	0.87%	0.838%
HSBC Jintrust Small/mid-cap Equity Fund	0.047%	0.18%	0.138%

Source: Author's calculation

Selectivity is made up by the sum of net selectivity and diversification. Therefore, it is not difficult to compute the net selectivity according to Formula 3.18. AIFMC Global View Fund and BOCOM Schroder Blue Chip Stock Fund have negative net selectivity value which means manager is short of achieving the goal under these two equity funds' risk level.

4.8.2 Downside Risk

Downside risk is used in the Sortino ratio and this measure is different from Sharpe ratio. Sortino measure evaluates the portfolio's average return in excess of minimum acceptable return value and it is often the risk free rate. Downside risk shows the volatility of the return which is below some expected rate. Therefore, one of the most useful measure is semi-deviation, which means the standard deviation of the portfolio returns that exceed expectations (REILLY and BROWN, 2009).

Table 4.45 Performance Evaluation by Sortino Ratio

	AIFMCGV	BSGMA	BSBCS	BSPS	HJLE	HJSE
R_p	-0.11%	1.04%	0.31%	1.09%	1.26%	0.57%
R_f	0.3%					
Sharpe ratio	-5.05%	10.17%	-0.07%	9.47%	13.97%	3.45%
Count $R_i < \overline{R}$	33	34	35	37	40	39
Downside risk	0.0977	0.0694	0.0743	0.0763	0.0512	0.0704
Sortino ratio	-4.34%	10.48%	-0.06%	10.14%	18.57%	3.59%

Source: Author's calculation

Due to the fact that Downside risk needs the figure which is lower than the market benchmark return, therefore it is necessary to count and pick up the correct number that fit this assumption. After calculating the semi-deviation according to the method of calculating standard deviation and the Sharpe ratio by Formula 3.20, it is easy to obtain Sortino ratio with return target (risk free rate). Applying the Sharpe ratio, risk free rate and Downside risk into the Formula 3.19, the results can be ranked from high to low. And it is clear that all of these six selected equity funds have the same ranking under both Sharpe ratio and Sortino ratio. This is because the return distributions are symmetrical for equity funds.

Figure 4.46 Performance Ranking by Downside Risk

	Sortino ratio	Ranking
AIFMC Global View Fund	-4.34%	6
BOCOM Schroder Growth Mixed A	10.48%	2
BOCOM Schroder Blue Chip Stock Fund	-0.06%	5
BOC Schroder Pioneer Stock Fund	10.14%	3
HSBC Jintrust Large-cap Equity Fund	18.57%	1
HSBC Jintrust Small/mid-cap Equity Fund	3.59%	4

Source: Author's calculation

Figure 4.46 shows the ranking according to the results of Sortino ratio. The reason causing high Sortino ratio based on same minimum acceptable return (risk free rate) is either high

portfolio return or low downside risk. HSBC Jintrust Large-cap Equity Fund, it has the highest portfolio return and lowest downside risk, therefore it has the highest Sortino ratio. The reason causing low downside risk is high volatility.

4.9 Summary of Overall Results

Figure 4.47 Ranking Summary by all Risk-Adjusted Measures

Fund	Treynor ratio		Sharpe ratio		Jensen alpha		Information ratio		Overall performance		Selectivity		Sortino ratio	
AIFMCGV	-0.84%	6	-5.05%	6	-0.0044	6	-5.52%	6	-0.46%	6	-0.48%	6	-4.34%	6
BSGMA	1.07%	2	10.17%	2	0.0801	4	12.56%	2	0.69%	3	0.66%	3	10.48%	2
BSBCS	-0.01%	5	-0.07%	5	0.0752	5	-0.86%	5	-0.04%	5	-0.07%	5	-0.06%	5
BSPS	1.06%	3	9.47%	3	0.0859	2	11.64%	3	0.73%	2	0.71%	2	10.14%	3
HJLE	1.24%	1	13.97%	1	0.0917	1	23.58%	1	0.91%	1	0.88%	1	18.57%	1
HJSE	0.34%	4	3.45%	4	0.0816	3	4.23%	4	0.21%	4	0.18%	4	3.59%	4

Source: Author's collection

After all risk-adjusted methods used in previous chapters, it is possible to make summary to all equity funds. From Figure 4.47, there are 7 comparison indicators and the results are similar due to different methods. First of all, the best performance equity fund is HSBC Jintrust Large-cap Equity Fund (HJLE), it is ranked as the first position for all of measures. Then, BOCOM Schroder Growth Mixed A (BSGMA), BOC Schroder Pioneer Stock Fund (BSPS), HSBC Jintrust Small/mid-cap Equity Fund (HJSE) are also good with second to forth position mostly. Lastly, AIFMC Global View Fund (AIFMCGV), BOCOM Schroder Blue Chip Stock Fund (BSBCS) are ranked as the worst among these six selected equity funds. Both of these two equity funds play in the last two position for all measures. And indicator values are always negative, which means it is not rational to choose them as investment target.

For long-term investment recommendation, it is best to invest on HSBC Jintrust Large-cap Equity Fund. All indicators show that this equity fund perform well during past five years. However, it is also important to notice that this equity fund has the highest standard deviation and beta coefficient, which means the total risk and systematic risk are high. Therefore, investors should prepare for the fluctuation of this equity fund.

5 Conclusion

Chinese mutual fund market as one of most important components in Chinese financial market gets more and more attentions during the development of mutual fund recently. And investors are desirable for investing on the funds with higher return and lower risk to achieve long-term capital gains. Therefore, it is necessary to evaluate the performance of mutual fund in advance. This diploma thesis is to estimate the performance of sixed selected equity funds in China during 2010 to 2015 by various risk-adjusted methods so that to choose the fund that can perfectly match the requirement of investors' need.

According to the usage of risk-adjusted return methods, the simplest way of calculation is Sharpe and Treynor measure. However, Sharpe measure ignores the diversification potential of portfolio and difficult to examine the statistical significance, Treynor measure ignores unsystematic risk in portfolios. Furthermore, Information measure is to miss investment opportunities if just using single market benchmark. Therefore, after the composite consideration, the most appropriate method based on basic average return is Jensen's alpha measure, even though it is the most complex method due to the using of regression analysis, it is easier to understand. It is possible to estimate the manager's skill level about statistical significance. And the most important reason is that Jensen's alpha can be computed on any risk-return model whereas Sharpe and Treynor measure just rely on the total risk and systematic risk.

The results of the risk-adjusted return methods application show HSBC Jintrust Large-cap Equity Fund. All risk-adjusted measure indicators show that this equity fund is in the first position for average five years. Therefore, this equity fund is the first choice for investors.

In the second level are BOCOM Schroder Growth Mixed A (BSGMA), BOC Schroder Pioneer Stock Fund (BSPS), HSBC Jintrust Small/mid-cap Equity Fund (HJSE). These equity funds are good under different estimation measures. These equity funds have less return and lower fluctuation comparing to HSBC Jintrust Large-cap Equity Fund. Therefore, these equity funds are better suitable for the investors who does not want to suffer high volatility.

The worst performance equity funds are AIFMC Global View Fund (AIFMCGV) and

BOCOM Schroder Blue Chip Stock Fund (BSBCS). The annual average return of these two funds cannot meet the market benchmark so that the results of all measures show negative. Therefore, it is not suggested to invest on these two equity funds.

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List of Abbreviations

AMAC	Asset Management Association of China
CVIC	China Venture tech Investment Corporation
NAV	Net Asset Value
AIFMCGV	AIFMC Global View Fund
BSGMA	BOCOM Schroder Growth Mixed A
BSBCS	BOCOM Schroder Blue Chip Stock Fund
BSPS	BOC Schroder Pioneer Stock Fund
HJLE	HSBC Jintrust Large-cap Equity Fund
HJSE	HSBC Jintrust Small/mid-cap Equity Fund
CSI300	Chinese Security Index 300

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Ostrava dated 22.04.2016

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List of Annexes

Annex 1

Monthly Net Asset Value of six selected Equity Funds (2010-2015)

Date/Code	AIFMCGV	BSGMA	BSBCS	BSPS	HJLE	HJSE
2009/12/31	3.5521	2.8121	0.9274	1.2457	1.1388	1.0179
2010/1/29	3.3187	2.5089	0.8465	1.1329	1.0691	0.9554
2010/2/26	3.3825	2.5401	0.8634	1.159	1.0683	0.9896
2010/3/31	3.429	2.5559	0.8614	1.1645	1.0747	0.9937
2010/4/30	3.2442	2.4325	0.8163	1.1255	1.0617	0.9806
2010/5/31	3.1094	2.3206	0.7785	1.0965	1.0231	0.9615
2010/6/30	2.9238	2.1978	0.7242	1.0187	0.9654	0.8992
2010/7/30	3.2225	2.3718	0.777	1.0931	1.0487	0.9728
2010/8/31	3.2937	2.4999	0.8089	1.1752	1.0821	1.0291
2010/9/30	3.4319	2.5704	0.8315	1.2173	1.0972	1.0569
2010/10/29	3.7508	2.7839	0.8769	1.2793	1.1525	1.0699
2010/11/30	3.5536	2.8436	0.859	1.2884	1.2045	1.1276
2010/12/31	3.6931	2.7751	0.8367	1.2954	1.1973	1.0857
2011/1/31	3.5936	2.5781	0.7849	1.2091	1.1501	1.03
2011/2/28	3.757	2.7458	0.8237	1.28	1.1961	1.0666
2011/3/31	3.7035	2.7058	0.8084	1.2223	1.1461	1.0057
2011/4/29	3.5761	2.6885	0.7875	1.1879	1.1324	0.9571
2011/5/31	3.43	2.5511	0.7509	1.1332	1.0766	0.9061
2011/6/30	3.5663	2.6771	0.7727	1.1773	1.1043	0.916
2011/7/29	3.7207	2.7101	0.7724	1.1653	1.1235	0.8957
2011/8/31	3.6498	2.6839	0.7558	1.1148	1.1049	0.8703
2011/9/30	3.3062	2.4336	0.6879	1.002	0.9899	0.7747
2011/10/31	3.4297	2.494	0.7095	1.0352	1.0306	0.8114

2011/11/30	3.3835	2.4204	0.6809	0.966	1.0179	0.7648
2011/12/31	3.1801	2.2839	0.6456	0.939	0.9651	0.7213
2012/1/31	3.1617	2.2139	0.6363	0.9226	0.9268	0.6938
2012/2/29	3.3642	2.3942	0.6788	0.9896	0.9913	0.7507
2012/3/31	3.2655	2.3416	0.6571	0.9627	0.9535	0.729
2012/4/27	3.3712	2.4601	0.6876	1.0383	0.9999	0.7674
2012/5/31	3.3624	2.5744	0.7109	1.0805	1.0234	0.7703
2012/6/30	3.3123	2.5304	0.6954	1.06	1.021	0.755
2012/7/31	3.2088	2.473	0.6838	1.0516	0.9926	0.7138
2012/8/31	3.1365	2.3165	0.6398	0.9894	0.957	0.7056
2012/9/30	2.0633	2.446	0.6713	1.0309	0.976	0.699
2012/10/31	2.0048	2.4837	0.6747	1.0372	0.9658	0.6922
2012/11/30	1.9182	2.2992	0.6335	0.9846	0.8867	0.6791
2012/12/31	2.1673	2.6168	0.7116	1.1233	1.0133	0.7317
2013/1/31	2.3037	2.7507	0.7284	1.1587	1.0593	0.7715
2013/2/28	2.3324	2.847	0.7357	1.1688	1.0685	0.7666
2013/3/29	2.3086	2.9009	0.7161	1.1282	1.044	0.7312
2013/4/26	2.3148	2.8976	0.713	1.1428	1.0273	0.7124
2013/5/31	1.7589	3.1419	0.7692	1.2422	1.1025	0.807
2013/6/30	1.6149	2.9365	0.709	1.1182	1.0137	0.7535
2013/7/31	1.7026	3.1262	0.7416	1.1585	1.0663	0.8211
2013/8/30	1.7227	3.2498	0.7562	1.1957	1.0762	0.8289
2013/9/30	1.7811	3.3352	0.7919	1.2084	1.1344	0.8958
2013/10/31	1.74	3.1923	0.7435	1.1746	1.0818	0.8262
2013/11/29	1.8103	3.3111	0.7647	1.2122	1.1177	0.8576
2013/12/31	1.8283	3.2271	0.75	1.2023	1.1183	0.8457
2014/1/30	1.9213	3.1186	0.7494	1.1743	1.0835	0.8275
2014/2/28	1.9171	3.0456	0.7359	1.2019	1.0611	0.8026

2014/3/31	1.8246	2.7812	0.685	1.1557	0.9948	0.7822
2014/4/30	1.8424	2.8181	0.6757	1.1182	0.9864	0.785
2014/5/30	1.8448	2.8236	0.6814	1.0966	1.0033	0.7767
2014/6/30	1.8793	2.8832	0.6902	1.147	1.0118	0.7957
2014/7/31	1.4267	2.9356	0.6984	1.1859	1.039	0.8164
2014/8/29	1.4402	2.9993	0.7099	1.2245	1.0434	0.8242
2014/9/30	1.4968	3.1854	0.7551	1.2703	1.0949	0.894
2014/10/31	1.4843	3.1711	0.7547	1.2925	1.1404	0.9269
2014/11/28	1.5195	3.3047	0.7665	1.285	1.3343	1.0514
2014/12/31	1.6598	3.2246	0.8166	1.3336	1.7921	1.1678
2015/1/30	1.759	3.3857	0.8441	1.3712	1.7237	1.2031
2015/2/27	1.9442	3.6712	0.9032	1.4879	1.7669	1.2543
2015/3/31	2.1848	4.4613	1.0482	1.6993	2.0025	1.4571
2015/4/30	2.4617	5.473	1.1979	1.9927	2.2952	1.6799
2015/5/29	2.8522	6.3551	1.3998	2.4942	2.3284	1.8439
2015/6/30	2.4999	5.4671	1.2004	2.0486	2.3291	1.5447
2015/7/31	2.2618	4.5968	0.8521	1.6753	2.116	1.1871
2015/8/31	1.9827	4.0478	0.7535	1.3209	2.0056	0.9923
2015/9/30	1.9984	4.0398	0.7709	1.4183	1.9627	0.9463
2015/10/30	2.3462	4.6381	0.8808	1.8241	2.1812	1.1009
2015/11/30	2.4653	4.7016	0.9473	2.0956	2.2389	1.1625
2015/12/31	2.4921	4.9753	0.9644	2.1559	2.4226	1.2617

Annex 2

Monthly Return of six selected Equity Funds (2010-2015)

	340006	**519692**	**519694**	**519698**	**540006**	**540007**
2010/1/29	-6.57%	-10.78%	-8.72%	-9.06%	-6.12%	-6.14%
2010/2/26	1.92%	1.24%	2.00%	2.30%	-0.07%	3.58%
2010/3/31	1.37%	0.62%	-0.23%	0.47%	0.60%	0.41%
2010/4/30	-5.39%	-4.83%	-5.24%	-3.35%	-1.21%	-1.32%
2010/5/31	-4.16%	-4.60%	-4.63%	-2.58%	-3.64%	-1.95%
2010/6/30	-5.97%	-5.29%	-6.97%	-7.10%	-5.64%	-6.48%
2010/7/30	10.22%	7.92%	7.29%	7.30%	8.63%	8.19%
2010/8/31	2.21%	5.40%	4.11%	7.51%	3.18%	5.79%
2010/9/30	4.20%	2.82%	2.79%	3.58%	1.40%	2.70%
2010/10/29	9.29%	8.31%	5.46%	5.09%	5.04%	1.23%
2010/11/30	-5.26%	2.14%	-2.04%	0.71%	4.51%	5.39%
2010/12/31	3.93%	-2.41%	-2.60%	0.54%	-0.60%	-3.72%
2011/1/31	-2.69%	-7.10%	-6.19%	-6.66%	-3.94%	-5.13%
2011/2/28	4.55%	6.50%	4.94%	5.86%	4.00%	3.55%
2011/3/31	-1.42%	-1.46%	-1.86%	-4.51%	-4.18%	-5.71%
2011/4/29	-3.44%	-0.64%	-2.59%	-2.81%	-1.20%	-4.83%
2011/5/31	-4.09%	-5.11%	-4.65%	-4.60%	-4.93%	-5.33%
2011/6/30	3.97%	4.94%	2.90%	3.89%	2.57%	1.09%
2011/7/29	4.33%	1.23%	-0.04%	-1.02%	1.74%	-2.22%
2011/8/31	-1.91%	-0.97%	-2.15%	-4.33%	-1.66%	-2.84%
2011/9/30	-9.41%	-9.33%	-8.98%	-10.12%	-10.41%	-10.98%
2011/10/31	3.74%	2.48%	3.14%	3.31%	4.11%	4.74%
2011/11/30	-1.35%	-2.95%	-4.03%	-6.68%	-1.23%	-5.74%

2011/12/31	-6.01%	-5.64%	-5.18%	-2.80%	-5.19%	-5.69%
2012/1/31	-0.58%	-3.06%	-1.44%	-1.75%	-3.97%	-3.81%
2012/2/29	6.40%	8.14%	6.68%	7.26%	6.96%	8.20%
2012/3/31	-2.93%	-2.20%	-3.20%	-2.72%	-3.81%	-2.89%
2012/4/27	3.24%	5.06%	4.64%	7.85%	4.87%	5.27%
2012/5/31	-0.26%	4.65%	3.39%	4.06%	2.35%	0.38%
2012/6/30	-1.49%	-1.71%	-2.18%	-1.90%	-0.23%	-1.99%
2012/7/31	-3.12%	-2.27%	-1.67%	-0.79%	-2.78%	-5.46%
2012/8/31	-2.25%	-6.33%	-6.43%	-5.91%	-3.59%	-1.15%
2012/9/30	-34.22%	5.59%	4.92%	4.19%	1.99%	-0.94%
2012/10/31	-2.84%	1.54%	0.51%	0.61%	-1.05%	-0.97%
2012/11/30	-4.32%	-7.43%	-6.11%	-5.07%	-8.19%	-1.89%
2012/12/31	12.99%	13.81%	12.33%	14.09%	14.28%	7.75%
2013/1/31	6.29%	5.12%	2.36%	3.15%	4.54%	5.44%
2013/2/28	1.25%	3.50%	1.00%	0.87%	0.87%	-0.64%
2013/3/29	-1.02%	1.89%	-2.66%	-3.47%	-2.29%	-4.62%
2013/4/26	0.27%	-0.11%	-0.43%	1.29%	-1.60%	-2.57%
2013/5/31	-24.02%	8.43%	7.88%	8.70%	7.32%	13.28%
2013/6/30	-8.19%	-6.54%	-7.83%	-9.98%	-8.05%	-6.63%
2013/7/31	5.43%	6.46%	4.60%	3.60%	5.19%	8.97%
2013/8/30	1.18%	3.95%	1.97%	3.21%	0.93%	0.95%
2013/9/30	3.39%	2.63%	4.72%	1.06%	5.41%	8.07%
2013/10/31	-2.31%	-4.28%	-6.11%	-2.80%	-4.64%	-7.77%
2013/11/29	4.04%	3.72%	2.85%	3.20%	3.32%	3.80%
2013/12/31	0.99%	-2.54%	-1.92%	-0.82%	0.05%	-1.39%
2014/1/30	5.09%	-3.36%	-0.08%	-2.33%	-3.11%	-2.15%
2014/2/28	-0.22%	-2.34%	-1.80%	2.35%	-2.07%	-3.01%
2014/3/31	-4.82%	-8.68%	-6.92%	-3.84%	-6.25%	-2.54%

2014/4/30	0.98%	1.33%	-1.36%	-3.24%	-0.84%	0.36%
2014/5/30	0.13%	0.20%	0.84%	-1.93%	1.71%	-1.06%
2014/6/30	1.87%	2.11%	1.29%	4.60%	0.85%	2.45%
2014/7/31	-24.08%	1.82%	1.19%	3.39%	2.69%	2.60%
2014/8/29	0.95%	2.17%	1.65%	3.25%	0.42%	0.96%
2014/9/30	3.93%	6.20%	6.37%	3.74%	4.94%	8.47%
2014/10/31	-0.84%	-0.45%	-0.05%	1.75%	4.16%	3.68%
2014/11/28	2.37%	4.21%	1.56%	-0.58%	17.00%	13.43%
2014/12/31	9.23%	-2.42%	6.54%	3.78%	34.31%	11.07%
2015/1/30	5.98%	5.00%	3.37%	2.82%	-3.82%	3.02%
2015/2/27	10.53%	8.43%	7.00%	8.51%	2.51%	4.26%
2015/3/31	12.38%	21.52%	16.05%	14.21%	13.33%	16.17%
2015/4/30	12.67%	22.68%	14.28%	17.27%	14.62%	15.29%
2015/5/29	15.86%	16.12%	16.85%	25.17%	1.45%	9.76%
2015/6/30	-12.35%	-13.97%	-14.24%	-17.87%	0.03%	-16.23%
2015/7/31	-9.52%	-15.92%	-29.02%	-18.22%	-9.15%	-23.15%
2015/8/31	-12.34%	-11.94%	-11.57%	-21.15%	-5.22%	-16.41%
2015/9/30	0.79%	-0.20%	2.31%	7.37%	-2.14%	-4.64%
2015/10/30	17.40%	14.81%	14.26%	28.61%	11.13%	16.34%
2015/11/30	5.08%	1.37%	7.55%	14.88%	2.65%	5.60%
2015/12/31	1.09%	5.82%	1.81%	2.88%	8.20%	8.53%

Annex 3

Monthly Market Index and Return- CSI300 and NASDAQ Composite (2010-2015)

	CSI300	Return	NASDAQ	Return
2009/12/31	3575.68		2269.15	
2010/1/29	3204.16	-10.39%	2147.35	-5.67%
2010/2/26	3281.67	2.42%	2238.26	4.06%
2010/3/31	3345.61	1.95%	2397.96	6.66%
2010/4/30	3067.36	-8.32%	2461.19	2.57%
2010/5/31	2773.26	-9.59%	2257.04	-9.05%
2010/6/30	2563.07	-7.58%	2109.24	-7.01%
2010/7/30	2868.85	11.93%	2254.7	6.45%
2010/8/31	2903.19	1.20%	2114.03	-6.65%
2010/9/30	2935.57	1.12%	2368.62	10.75%
2010/10/29	3379.98	15.14%	2507.41	5.54%
2010/11/30	3136.99	-7.19%	2498.23	-0.37%
2010/12/31	3128.26	-0.28%	2652.87	5.83%
2011/1/31	3076.51	-1.65%	2700.08	1.75%
2011/2/28	3239.56	5.30%	2782.27	2.95%
2011/3/31	3223.29	-0.50%	2781.07	-0.04%
2011/4/29	3192.72	-0.95%	2873.54	3.22%
2011/5/31	3001.56	-5.99%	2835.3	-1.35%
2011/6/30	3044.09	1.42%	2773.52	-2.23%
2011/7/29	2972.08	-2.37%	2756.38	-0.62%
2011/8/31	2846.78	-4.22%	2579.46	-6.86%
2011/9/30	2581.35	-9.32%	2415.4	-6.79%
2011/10/31	2695.31	4.41%	2684.41	10.02%

2011/11/30	2521.52	-6.45%	2620.34	-2.45%
2011/12/31	2345.74	-6.97%	2605.15	-0.58%
2012/1/31	2464.26	5.05%	2813.84	7.42%
2012/2/29	2634.14	6.89%	2966.89	5.16%
2012/3/31	2454.9	-6.80%	3091.57	4.03%
2012/4/27	2626.16	6.98%	3046.36	-1.48%
2012/5/31	2632.04	0.22%	2827.34	-7.75%
2012/6/30	2461.61	-6.48%	2935.05	3.67%
2012/7/31	2332.92	-5.23%	2939.52	0.15%
2012/8/31	2204.87	-5.49%	3066.96	4.16%
2012/9/30	2293.11	4.00%	3116.23	1.58%
2012/10/31	2254.82	-1.67%	2977.23	-4.67%
2012/11/30	2139.66	-5.11%	3010.24	1.10%
2012/12/31	2522.95	17.91%	3019.51	0.31%
2013/1/31	2686.88	6.50%	3142.13	3.90%
2013/2/28	2673.33	-0.50%	3160.19	0.57%
2013/3/29	2495.08	-6.67%	3267.52	3.28%
2013/4/26	2447.31	-1.91%	3328.79	1.84%
2013/5/31	2606.43	6.50%	3455.91	3.68%
2013/6/30	2200.64	-15.57%	3403.25	-1.55%
2013/7/31	2193.02	-0.35%	3626.37	6.15%
2013/8/30	2313.91	5.51%	3589.87	-1.02%
2013/9/30	2409.04	4.11%	3771.48	4.82%
2013/10/31	2373.72	-1.47%	3919.71	3.78%
2013/11/29	2438.94	2.75%	4059.89	3.45%
2013/12/31	2330.03	-4.47%	4176.59	2.79%
2014/1/30	2202.45	-5.48%	4103.88	-1.77%
2014/2/28	2178.97	-1.07%	4308.12	4.74%

2014/3/31	2146.3	-1.50%	4198.99	-2.60%
2014/4/30	2158.66	0.58%	4114.56	-2.05%
2014/5/30	2156.46	-0.10%	4242.62	3.02%
2014/6/30	2165.12	0.40%	4408.18	3.76%
2014/7/31	2350.25	8.55%	4369.77	-0.88%
2014/8/29	2338.29	-0.51%	4580.27	4.60%
2014/9/30	2450.99	4.82%	4493.39	-1.93%
2014/10/31	2508.32	2.34%	4630.74	2.97%
2014/11/28	2808.82	11.98%	4791.63	3.36%
2014/12/31	3533.71	25.81%	4736.05	-1.17%
2015/1/30	3434.39	-2.81%	4635.24	-2.17%
2015/2/27	3572.84	4.03%	4963.53	6.61%
2015/3/31	4051.2	13.39%	4900.88	-1.28%
2015/4/30	4749.89	17.25%	4941.42	0.82%
2015/5/29	4840.83	1.91%	5070.03	2.54%
2015/6/30	4473	-7.60%	4986.87	-1.67%
2015/7/31	3816.7	-14.67%	5128.28	2.76%
2015/8/31	3366.54	-11.79%	4776.51	-7.36%
2015/9/30	3202.95	-4.86%	4620.16	-3.38%
2015/10/30	3534.08	10.34%	5053.75	8.58%
2015/11/30	3566.41	0.91%	5108.67	1.08%
2015/12/31	3767.91	5.65%	5007.41	-2.02%

Annex 4

Monthly Equity Funds and Market Benchmark Excess Return (2010-2015)

	340006	**519692**	**519694**	**519698**	**540006**	**540007**
2010/1/29	3.82%	-0.39%	1.67%	1.34%	4.27%	4.25%
2010/2/26	-0.50%	-1.18%	-0.42%	-0.12%	-2.49%	1.16%
2010/3/31	-0.57%	-1.33%	-2.18%	-1.47%	-1.35%	-1.53%
2010/4/30	2.93%	3.49%	3.08%	4.97%	7.11%	7.00%
2010/5/31	5.43%	4.99%	4.96%	7.01%	5.95%	7.64%
2010/6/30	1.61%	2.29%	0.60%	0.48%	1.94%	1.10%
2010/7/30	-1.71%	-4.01%	-4.64%	-4.63%	-3.30%	-3.75%
2010/8/31	1.01%	4.20%	2.91%	6.31%	1.99%	4.59%
2010/9/30	3.08%	1.70%	1.68%	2.47%	0.28%	1.59%
2010/10/29	-5.85%	-6.83%	-9.68%	-10.05%	-10.10%	-13.91%
2010/11/30	1.93%	9.33%	5.15%	7.90%	11.70%	12.58%
2010/12/31	4.20%	-2.13%	-2.32%	0.82%	-0.32%	-3.44%
2011/1/31	-1.04%	-5.44%	-4.54%	-5.01%	-2.29%	-3.48%
2011/2/28	-0.75%	1.20%	-0.36%	0.56%	-1.30%	-1.75%
2011/3/31	-0.92%	-0.95%	-1.36%	-4.01%	-3.68%	-5.21%
2011/4/29	-2.49%	0.31%	-1.64%	-1.87%	-0.25%	-3.88%
2011/5/31	1.90%	0.88%	1.34%	1.38%	1.06%	0.66%
2011/6/30	2.56%	3.52%	1.49%	2.47%	1.16%	-0.32%
2011/7/29	6.69%	3.60%	2.33%	1.35%	4.10%	0.15%
2011/8/31	2.31%	3.25%	2.07%	-0.12%	2.56%	1.38%
2011/9/30	-0.09%	0.00%	0.34%	-0.79%	-1.08%	-1.66%
2011/10/31	-0.68%	-1.93%	-1.27%	-1.10%	-0.30%	0.32%
2011/11/30	5.10%	3.50%	2.42%	-0.24%	5.22%	0.70%

2011/12/31	0.96%	1.33%	1.79%	4.18%	1.78%	1.28%
2012/1/31	-5.63%	-8.12%	-6.49%	-6.80%	-9.02%	-8.87%
2012/2/29	-0.49%	1.25%	-0.21%	0.37%	0.07%	1.31%
2012/3/31	3.87%	4.61%	3.61%	4.09%	2.99%	3.91%
2012/4/27	-3.74%	-1.92%	-2.33%	0.88%	-2.11%	-1.71%
2012/5/31	-0.48%	4.42%	3.16%	3.84%	2.13%	0.15%
2012/6/30	4.99%	4.77%	4.29%	4.58%	6.24%	4.49%
2012/7/31	2.10%	2.96%	3.56%	4.44%	2.45%	-0.23%
2012/8/31	3.24%	-0.84%	-0.95%	-0.43%	1.90%	4.34%
2012/9/30	-38.22%	1.59%	0.92%	0.19%	-2.02%	-4.94%
2012/10/31	-1.17%	3.21%	2.18%	2.28%	0.62%	0.70%
2012/11/30	0.79%	-2.32%	-1.00%	0.04%	-3.08%	3.21%
2012/12/31	-4.93%	-4.10%	-5.59%	-3.83%	-3.64%	-10.17%
2013/1/31	-0.20%	-1.38%	-4.14%	-3.35%	-1.96%	-1.06%
2013/2/28	1.75%	4.01%	1.51%	1.38%	1.37%	-0.13%
2013/3/29	5.65%	8.56%	4.00%	3.19%	4.37%	2.05%
2013/4/26	2.18%	1.80%	1.48%	3.21%	0.31%	-0.66%
2013/5/31	-30.52%	1.93%	1.38%	2.20%	0.82%	6.78%
2013/6/30	7.38%	9.03%	7.74%	5.59%	7.51%	8.94%
2013/7/31	5.78%	6.81%	4.94%	3.95%	5.54%	9.32%
2013/8/30	-4.33%	-1.56%	-3.54%	-2.30%	-4.58%	-4.56%
2013/9/30	-0.72%	-1.48%	0.61%	-3.05%	1.30%	3.96%
2013/10/31	-0.84%	-2.82%	-4.65%	-1.33%	-3.17%	-6.30%
2013/11/29	1.29%	0.97%	0.10%	0.45%	0.57%	1.05%
2013/12/31	5.46%	1.93%	2.54%	3.65%	4.52%	3.08%
2014/1/30	10.56%	2.11%	5.40%	3.15%	2.36%	3.32%
2014/2/28	0.85%	-1.27%	-0.74%	3.42%	-1.00%	-1.94%
2014/3/31	-3.33%	-7.18%	-5.42%	-2.34%	-4.75%	-1.04%

2014/4/30	0.40%	0.75%	-1.93%	-3.82%	-1.42%	-0.22%
2014/5/30	0.23%	0.30%	0.95%	-1.83%	1.82%	-0.96%
2014/6/30	1.47%	1.71%	0.89%	4.19%	0.45%	2.04%
2014/7/31	-32.63%	-6.73%	-7.36%	-5.16%	-5.86%	-5.95%
2014/8/29	1.46%	2.68%	2.16%	3.76%	0.93%	1.46%
2014/9/30	-0.89%	1.39%	1.55%	-1.08%	0.12%	3.65%
2014/10/31	-3.17%	-2.79%	-2.39%	-0.59%	1.82%	1.34%
2014/11/28	-9.61%	-7.77%	-10.42%	-12.56%	5.02%	1.45%
2014/12/31	-16.57%	-28.23%	-19.27%	-22.03%	8.50%	-14.74%
2015/1/30	8.79%	7.81%	6.18%	5.63%	-1.01%	5.83%
2015/2/27	6.50%	4.40%	2.97%	4.48%	-1.53%	0.22%
2015/3/31	-1.01%	8.13%	2.67%	0.82%	-0.05%	2.78%
2015/4/30	-4.57%	5.43%	-2.96%	0.02%	-2.63%	-1.96%
2015/5/29	13.95%	14.20%	14.94%	23.25%	-0.47%	7.85%
2015/6/30	-4.75%	-6.37%	-6.65%	-10.27%	7.63%	-8.63%
2015/7/31	5.15%	-1.25%	-14.34%	-3.55%	5.52%	-8.48%
2015/8/31	-0.55%	-0.15%	0.22%	-9.36%	6.58%	-4.62%
2015/9/30	5.65%	4.66%	7.17%	12.23%	2.72%	0.22%
2015/10/30	7.07%	4.47%	3.92%	18.27%	0.79%	6.00%
2015/11/30	4.16%	0.45%	6.64%	13.97%	1.73%	4.68%
2015/12/31	-4.56%	0.17%	-3.84%	-2.77%	2.55%	2.88%